

NFTs and Digital Assets as Objects of Intellectual Property: A Comparative International Legal Analysis of Russia, Uzbekistan, and the United States

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ABSTRACT

Objective: This article presents a comparative legal analysis of NFT regulation in the Russian Federation, the Republic of Uzbekistan, and the United States of America, three jurisdictions that have adopted markedly different regulatory strategies. **Method:** Building on an analysis of the technological substrate of NFTs (distributed ledgers, smart contracts, tokenization), the article develops a jurisdiction-neutral, two-tier classification of digital assets by legal nature, distinguishing payment, investment, functional, and representative digital assets, and further differentiating representative assets (NFTs) into copyright-based, related-rights-based, and extra-IP subclasses. The article examines leading precedents (*Hermès International v. Rothschild*; *Miramax v. Tarantino*; *Capitol Records v. ReDigi*) and the applicability of the Berne Convention, the TRIPS Agreement, and the WIPO Copyright Treaty to NFT-associated works, identifying three international-law gaps concerning resale royalties, choice-of-law rules, and default licensing terms. **Results:** The comparative analysis shows that, despite divergent institutional strategies, codified special legislation in Russia, an experimental regulatory-sandbox model in Uzbekistan, and fragmented federal and state-level regulation combined with case law in the United States, all three jurisdictions share a structural gap: none provides a default rule on the scope of rights transferred upon the sale of an NFT. **Novelty:** On this basis, the article proposes concrete legislative amendments for each jurisdiction and outlines a concept for optional WIPO Model Provisions on Representative Digital Assets, intended to harmonize national approaches without requiring formal treaty ratification.

INTRODUCTION

The rapid development of distributed ledger technology and the mass adoption of blockchain platforms have given rise to a fundamentally new category of property objects: non-fungible tokens (NFTs) and other digital assets. Between 2020 and 2023 alone, the aggregate NFT trading volume reached approximately USD 40 billion, spanning the art market, the music industry, video games, and virtual real estate. This rapid growth has forced national legal systems to confront a foundational question: is an NFT an independent object of intellectual property, and if so, what legal mechanism protects it [1], [2]?

National answers diverge sharply. Some jurisdictions classify NFTs as a form of digital financial asset governed by financial-market rules; others treat them as a vehicle for copyright or related rights; still others avoid a normative definition altogether. Because blockchain transactions are inherently cross-border, pseudonymous, and executed on decentralized infrastructure, no single national legal order can regulate the

phenomenon in isolation — a circumstance that gives the problem genuine international-law significance [3].

This article undertakes a comparative legal analysis of NFT regulation in three jurisdictions that have pursued distinct regulatory strategies and stand at different stages of implementation: the Russian Federation, which has adopted codified special legislation on digital financial assets; the Republic of Uzbekistan, which has pursued rapid, experimental rule-making through presidential decrees and regulatory sandboxes; and the United States, which relies on the incremental extension of existing statutes, agency practice, and case law rather than a single comprehensive federal act [4], [5], [6].

The object of the study is the body of social relations arising from the creation, circulation, and legal protection of NFTs and digital assets as objects of intellectual property amid the globalization of the digital economy. The subject of the study comprises the relevant provisions of Russian, Uzbek, and U.S. law, norms of international law, doctrinal accounts of the legal nature of NFTs, and judicial and regulatory practice.

The purpose of the study is to conduct a comprehensive comparative legal analysis of the regulation of NFTs and digital assets as objects of intellectual property in the three jurisdictions and, on that basis, to develop proposals for improving national legislation and for the international-law harmonization of protection standards. To achieve this purpose, the study: (i) examines the legal nature of NFTs and proposes an original classification of digital assets by legal criterion; (ii) analyzes the applicability of existing international IP instruments to digital assets and identifies the gaps therein; (iii) undertakes a systematic analysis of Russian, Uzbek, and U.S. legislation on NFTs; (iv) compares the three national models, identifying their fundamental similarities and differences; and (v) formulates proposals for harmonizing international regulation, including the concept of a WIPO model act on digital IP objects.

Methodologically, the study combines general scientific methods (analysis and synthesis, systemic and functional approaches) with specifically legal methods: doctrinal interpretation of the three national legal systems; comparative legal analysis as the principal method; historical-legal analysis of the evolution of digital-asset regulation; and legal modeling for the formulation of *de lege ferenda* proposals.

The legal nature of NFTs has attracted growing but still fragmented scholarly attention. In Russian legal scholarship, the risks of tokenization under existing civil law have been examined by Savelyev [7], while the practical dimensions of NFT transactions in the absence of special regulation have been analyzed by Brisov and Pobedkin [8]. The problem of deposit and registration of copyright objects in the digital era has been addressed by Bliznets [9]. In the international literature, the legal nature of NFTs has been most influentially theorized by Fairfield [1], who proposed the concept of “tokenized” property, and by Ramos [10], [11], whose WIPO Magazine analyses argue that existing IP norms can be applied to NFTs without a wholesale revision of the existing framework. The international-law dimension is reflected in UNIDROIT’s Principles on Digital Assets and Private Law (2023) [3], which aim to unify approaches to the legal regime of digital

assets. Notwithstanding this body of work, no comprehensive comparative study simultaneously covering the Russian, Uzbek, and U.S. legal systems from the specific standpoint of the IP status of NFTs has previously been undertaken, which defines the contribution of the present article. Additional studies examine proprietary approaches and the broader legal regulation of NFT circulation [12], [13], [14].

The article's original contributions are threefold: first, a “dualism of NFTs” concept that separates the token as a technical carrier from the associated work as an independent object of protection; second, a two-tier classification of digital assets by legal nature; and third, a concept for model international WIPO provisions on representative digital assets.

RESEARCH METHOD

This study employed a qualitative doctrinal legal research design combined with comparative legal analysis. The research examined the legal status, regulation, and intellectual property implications of non-fungible tokens and other blockchain-based digital assets in the Russian Federation, the Republic of Uzbekistan, and the United States. Primary legal materials included national statutes, presidential decrees, regulations, international treaties, and judicial decisions, particularly the Berne Convention, the TRIPS Agreement, the WIPO Copyright Treaty, Russian and Uzbek digital-asset legislation, the United States Copyright Act, and relevant NFT-related court cases. Secondary materials consisted of scholarly journal articles, legal commentaries, institutional reports, and publications issued by WIPO, UNIDROIT, FINMA, and regulatory authorities. Comparative legal analysis was used as the principal method to identify similarities, differences, regulatory gaps, and transferable legal approaches across the three jurisdictions. Doctrinal interpretation was applied to determine the legal meaning and scope of existing rules governing copyright, digital assets, smart contracts, securities, and cross-border transactions. Historical-legal analysis was used to trace the development of digital-asset regulation, while systemic and functional approaches were employed to classify digital assets according to their economic functions and intellectual property characteristics. Finally, legal modeling was applied to formulate *de lege ferenda* recommendations for each jurisdiction and to develop the proposed WIPO Model Provisions on Representative Digital Assets.

RESULTS AND DISCUSSION

Results

Blockchain technology, the infrastructural basis of NFTs, was conceptually described in a 2008 white paper by the author or authors writing under the pseudonym Satoshi Nakamoto. Originally designed as the technical foundation for the Bitcoin cryptocurrency, its field of application has since expanded dramatically. A blockchain is a decentralized, distributed database in which information is organized into sequentially linked blocks, each containing a cryptographic hash of the preceding block — a structure that renders the ledger effectively immutable, since altering any block changes its hash

and breaks the chain of subsequent blocks, a change the network immediately detects [15].

From a legal standpoint, blockchain exhibits several characteristics that merit close analysis. First, decentralization: unlike traditional databases controlled by a single administrator (a state authority, a bank, a notary), a blockchain is maintained by a distributed network of nodes, each holding a complete copy of the ledger, so that no single jurisdiction can unilaterally alter or destroy the recorded data — a fact that calls into question the applicability of conventional enforcement mechanisms such as injunctions or court orders compelling the return of a token. Second, immutability: once a transaction has received sufficient network confirmations, it is practically irreversible, which makes provenance verifiable but deprives rights holders of tools for the forced seizure of unlawfully acquired tokens. Third, transparency: on public (permissionless) blockchains such as Ethereum, transactions are publicly verifiable through block explorers, which aids provenance tracking but creates privacy risks, since wallet transaction histories can potentially reveal a holder's financial behavior. Fourth, pseudonymity: network participants are identified by cryptographic addresses rather than personal data, which complicates enforcement even though full anonymity is not absolute, given the availability of blockchain analytics and the Know-Your-Customer obligations imposed on regulated exchanges. Fifth, autonomy: transfers occur peer-to-peer, without intermediaries, and are executed irreversibly upon the sender's digital signature, although the legal content of that transfer — the scope of rights conveyed — remains a matter for applicable law rather than for the technology itself.

Among blockchain platforms, Ethereum, launched in 2015 on the initiative of Vitalik Buterin, played the central role in the emergence of the NFT market by providing the first full smart-contract execution environment. In 2018, the ERC-721 standard, developed by William Entriken, Dieter Shirley, and others [16], formalized the technical requirements for non-fungible tokens, establishing core functions such as Transfer, Approve, and OwnerOf. The same year saw the adoption of ERC-1155, which supports both fungible and non-fungible tokens within a single smart contract. Alongside Ethereum, NFT trading is now conducted on Solana, Tezos, Flow, and Polygon, among other platforms.

The smart contract occupies a central place in NFT architecture. The term was coined by cryptographer and legal scholar Nick Szabo in 1994 to denote a computerized protocol for the digital formalization, verification, and execution of contractual terms; in 1997 Szabo defined a smart contract as a set of promises specified in digital form, including the protocols within which the parties perform those promises [17]. The practical realization of the concept became possible only with Ethereum's Turing-complete execution environment. Legally significant properties of smart contracts include autonomous execution, determinism, post-deployment immutability (subject to proxy-contract upgradeability patterns), and public verifiability of source code [18].

Applied to NFTs, a smart contract performs several functions simultaneously: it mints tokens, fixing unique identifiers and metadata; it maintains a registry mapping token IDs to wallet addresses; it executes transfers upon a seller's signed transaction; and — of particular significance for IP law — it can automatically pay royalties to the original creator upon each secondary resale, under the ERC-2981 standard. This embedded-royalty mechanism amounts to a technological implementation of the resale right (*droit de suite*) enshrined in Article 14ter of the Berne Convention for the Protection of Literary and Artistic Works (1886) and adopted, in varying forms, by a number of states [19].

A token must be distinguished from a coin: coins are the native units of account of a given blockchain (Bitcoin, Ether, SOL), while tokens are created atop an existing blockchain by means of smart contracts. NFTs are tokens in this sense. The process of creating an NFT is called minting, whereby the smart contract creates a new ledger entry, assigns a unique Token ID, and links it to the creator's address. Metadata — the work's title, the creator's name, a description, a link to the associated media file, and additional attributes — is typically stored off-chain, most commonly on IPFS, Arweave, or a marketplace's centralized servers, because on-chain storage of large media files would be prohibitively expensive. This architecture creates the well-documented "rug pull" risk: if a centralized server is taken offline or a URL changes, the token becomes a blockchain record pointing to a non-existent resource, leaving the holder with a technically valid but functionally "empty" token — a gap that calls for legislative attention to metadata-storage standards in all three jurisdictions studied.

The conflation of NFTs with cryptocurrencies is widespread not only in popular discourse but, regrettably, in a number of legislative instruments in the jurisdictions studied. Russia's Federal Law No. 259-FZ of 31 July 2020 "On Digital Financial Assets and Digital Currency" does not clearly distinguish fungible from non-fungible tokens, subsuming both under the single category of "digital financial asset." Uzbekistan's Law No. ZRU-813 of 3 April 2023 "On the Digital Economy" similarly uses the generalized category "crypto-asset" without separating out NFTs as an independent legal class. In the United States, several SEC enforcement actions have likewise treated individual NFT projects by analogy to crypto-securities without accounting for their non-fungible nature. Such conflation is conceptually mistaken and carries significant regulatory consequences. Five criteria are proposed to draw a clear analytical line [4], [20], [21].

An asset is fungible if every unit is identical to, and interchangeable with, every other unit of the same kind. Cryptocurrencies, like money, are fungible: one bitcoin equals any other bitcoin. NFTs, by contrast, are inherently non-fungible: each token carries a unique identifier distinguishing it from every other token, whether within the same collection or beyond it. This uniqueness renders NFTs unsuitable as a medium of exchange while making them potentially well suited to representing unique objects.

Cryptocurrencies are designed to perform monetary functions — medium of exchange, store of value, unit of account. NFTs are functionally oriented toward representing ownership or other rights in a specific unique object, whether digital or

physical, placing them conceptually closer to deeds, titles, or certificates of authenticity than to money.

Fungible cryptocurrencies are typically divisible to an arbitrarily small unit (a bitcoin to eight decimal places; an ether to eighteen). A classical NFT is indivisible, existing as a single whole. This has legal consequences for co-ownership: several persons wishing to jointly hold an NFT must resort to a special legal vehicle (trust, corporate entity) rather than technical fractionation of the token itself. The recent emergence of “fractionalized NFTs” (F-NFTs), in which an NFT is locked in a vault contract that issues fungible ERC-20 tokens representing fractional shares, raises the question whether such fraction tokens constitute securities — a question the SEC has, in a number of cases, answered affirmatively.

Fungible cryptocurrencies trade primarily on centralized exchanges (Binance, Coinbase) or decentralized automated market-makers (Uniswap, dYdX), where pricing is driven by order books or algorithms. NFTs trade on specialized marketplaces (OpenSea, Blur, Magic Eden, Foundation) where pricing is individualized. This difference carries regulatory significance: crypto exchanges are, in most jurisdictions, licensed as financial institutions, whereas NFT marketplaces generally operate under considerable legal uncertainty.

Fungible cryptocurrency prices generally obey the law of one price at any given moment. NFT prices are determined individually for each token based on creator reputation, rarity of attributes, provenance, membership in a well-known collection, and speculative interest, rendering the NFT market considerably less liquid than the cryptocurrency market.

Utility tokens (e.g., BAT, FIL) grant holders access to a specific product or service within a given platform and are generally fungible, without an investment component in the strict sense; their regime is shaped chiefly by consumer-protection law. Security tokens are the digital form of traditional financial instruments and are subject to the full apparatus of securities regulation, including disclosure and licensing requirements. Whether a given NFT is a security token depends, in the United States, on the *Howey* test articulated by the Supreme Court in *SEC v. W.J. Howey Co.* (1946) [22]: an instrument is an “investment contract” — and thus a security — where there is (1) an investment of money (2) in a common enterprise (3) with a reasonable expectation of profits (4) derived solely from the efforts of others. “Art” NFTs acquired primarily for aesthetic or collecting purposes generally fail the third and fourth prongs, whereas revenue-sharing NFTs and membership tokens in investment clubs may satisfy the test and thereby trigger SEC jurisdiction. Governance tokens confer voting rights within decentralized autonomous organizations (DAOs) and are typically fungible and unconnected to IP objects. Related classification questions for note-like instruments are assessed under the *Reves* family-resemblance framework [23].

The relationship between NFTs and traditional copyright objects is the most consequential question for this study. Two competing doctrinal positions have emerged.

Proponents of the “NFT-as-work” approach (Fairfield, Ramos, Savelyev) [1], [7], [10] treat the non-fungible token itself as an independent copyright object — a digital work protected on the same footing as traditional literary or artistic works. Proponents of the “NFT-as-carrier” approach (Kharitonova, Budylin, Polezhaev) [24], [25] insist that the NFT is merely a technical means — a kind of “digital frame” or “digital certificate” — while the associated work (an image, video, or audio file) is the true object of copyright, existing independently of the token. This article develops the latter position into the “dualism of NFTs” framework applied throughout the comparative analysis below.

Two further distinctions deserve note. First, NFT-based domain names (Ethereum Name Service, Unstoppable Domains) are governed not by a general NFT regime but by trademark and domain-name law, a point that has gained urgency amid cybersquatting disputes involving NFT domains that reproduce well-known trademarks. Second, in-game NFT items differ from pre-blockchain virtual items chiefly in that they exist independently of any single platform’s centralized database; in practice, however, their utility remains fully dependent on developer support, so that “true digital ownership” is considerably more limited than the technology alone would suggest.

The absence of a unified, generally accepted classification of digital assets is one of the most serious obstacles to adequate legal regulation. Existing classificatory schemes in the three jurisdictions are fragmentary and functionally oriented, which precludes their use as a unified analytical tool for comparative purposes. The most widely used scholarly scheme — the tripartite payment/utility/asset-token typology traced to the Swiss Financial Market Supervisory Authority (FINMA, 2018) — was developed for financial regulation and is not designed to classify NFTs as IP objects, nor does it accommodate hybrid instruments combining features of several classes [26].

This article proposes an original two-tier classification designed to overcome these limitations and to provide a single methodological instrument for the comparative analysis that follows. The first tier — functional type — distinguishes the principal classes of digital assets by economic function and legal regime. The second tier — the regime of IP protection — differentiates NFTs and other representative assets according to the nature of the associated object.

Class I — Payment Digital Assets (PDA). Cryptocurrencies and stablecoins functionally designed to serve monetary functions (e.g., Bitcoin, Ether, Tether, USD Coin). Criteria: fungibility; no link to a unique object; primary function as a medium of exchange or store of value. Legal regime: financial and currency legislation. Relationship to IP: neutral — PDAs are not, and cannot be, objects of copyright or related rights.

Class II — Investment Digital Assets (IDA). Security tokens and other instruments that are, in economic substance, investment contracts or other financial instruments. Criteria: satisfaction of the Howey test (in the United States) or analogous tests elsewhere; presence of an investment component; expectation of profit from the efforts of third parties. Legal regime: securities law, including disclosure and licensing requirements.

Relationship to IP: neutral, though an investment asset may theoretically be “wrapped” in NFT form, generating a competition of legal regimes.

Class III — Functional Digital Assets (FDA). Utility tokens, governance tokens, and similar instruments granting access or participation rights within a given platform or protocol. Criteria: a concrete utilitarian function; absence of a dominant investment component; tie to a specific platform or ecosystem. Legal regime: digital-asset circulation rules and, in certain respects, consumer-protection law. Relationship to IP: indirect — FDAs may mediate access to protected IP objects (e.g., a token granting access to a music library) without themselves being such objects.

Class IV — Representative Digital Assets (RDA). NFTs in the classical sense belong to this class, whose principal function is to represent — to certify and transfer — rights in a specific unique object. Unlike payment, investment, or functional assets, representative assets function as digital certificates of title to a unique object. This class exhibits the greatest legal complexity and intersects directly with intellectual property, which is why it alone warrants the second classification tier.

Hybrid digital assets, combining features of several classes, are common in practice. Revenue-sharing NFTs combine features of Classes IV and II; membership NFTs granting access to closed communities or content combine features of Classes IV and III; metaverse tokens performing the functions of virtual land (RDA), in-game currency (PDA), and governance (FDA) are tripartite hybrids. For hybrid assets, the article proposes a dominant-function principle: the legal regime is determined by the function that is primary from the standpoint of the parties’ intent and the instrument’s economic substance, with secondary functions treated as ancillary encumbrances or conditions.

Subclass RDA-1 — Copyright NFTs (CNFT). Tokens associated with copyright objects: visual art (including digital and generative art), literary works, musical compositions with lyrics, audiovisual works, and computer programs. The applicable protection regime is that of the relevant jurisdiction’s copyright law. Key legal questions include: the moment of a work’s copyright protection arising (generally, upon creation in objective form, independent of minting); the scope of rights transferred to the NFT purchaser (typically, mere possession of the token, absent transfer of economic copyright); the applicability of exhaustion-of-rights doctrine (Article 1272 of the Russian Civil Code; the first-sale doctrine under 17 U.S.C. § 109 in U.S. law); and the legal status of embedded royalty mechanisms [6], [27].

Subclass RDA-2 — Related-Rights NFTs (RRNFT). Tokens associated with objects of related (neighboring) rights — phonograms, performances, recorded performances, and broadcasts. This subclass has particular salience in the music industry, where the separation of authorial rights in a musical work from the related rights of performers and phonogram producers, and the need to obtain clearances from multiple rights holders, raise distinctive issues.

Subclass RDA-3 — Extra-IP NFTs (EIPNFT). Tokens associated with objects that are not, in the traditional legal sense, objects of intellectual property: in-game items,

virtual land in metaverses (Decentraland, The Sandbox), NFT domain names, certificates for physical goods (luxury goods, wine, real estate), “sports” collectible NFTs (e.g., NBA Top Shot), and PFP (profile-picture) NFTs. This is the most numerous and least regulated subclass, governed by general civil-law rules on property and obligations and, in certain cases, by special legislation; its objects most starkly reveal the conceptual limits of traditional IP categories when applied to digital assets.

This classification offers four advantages over existing schemes: it covers the full diversity of digital assets currently in circulation rather than confining itself to financial instruments; it draws a principled line between IP-related assets (Class IV) and those unrelated to IP (Classes I–III); within Class IV, it differentiates the legal regime according to the nature of the associated object, permitting correct application of copyright, related-rights, or other legal institutions; and it is jurisdiction-neutral, making it usable as a common analytical framework for comparative analysis of Russian, Uzbek, and U.S. law, as undertaken in the sections that follow.

The extent to which existing multilateral IP treaties — chiefly the Berne Convention, the TRIPS Agreement, and the WIPO Copyright Treaty (WCT) of 1996 — cover NFT-associated works, and which aspects of the NFT market fall outside their scope, is a threshold question for any project of international harmonization [19], [28], [29].

The Berne Convention, adopted in 1886 and last substantively revised at the 1971 Paris Conference, establishes minimum standards of protection for literary and artistic works among member states. Its key national-treatment principle (Article 5(1)) provides that authors who are nationals or residents of a Berne Union member enjoy, in every other member state, the same rights as that state grants its own nationals — a principle that creates a formal legal basis for protecting the rights of authors of NFT-associated digital works across all three jurisdictions studied, all of which are Berne Union members. The prohibition on formalities (Article 5(2)) is of particular practical importance for NFTs, since it forecloses any requirement that authors register or deposit a work as a condition of protection — a point directly relevant to debates about creating special NFT-work registries [19].

The Convention nonetheless dates from an era that could not have anticipated blockchain and tokenization, producing significant gaps. First, Article 14ter, on the resale right (*droit de suite*), is optional: member states may, but need not, adopt it, and protection is granted only on a reciprocal basis. This optionality produces a marked asymmetry in the cross-border application of smart-contract royalty mechanisms: a creator in Russia or Uzbekistan who sells an NFT to a U.S. buyer cannot expect the automatic royalty payment generated by a smart contract to be recognized as an exercise of *droit de suite* on the U.S. side, since the United States has not implemented the resale right at the federal level. Second, the Convention contains no choice-of-law rules; the question of the law applicable to contracts for the use of NFT-associated works is left to

each state's general private-international-law rules, producing the diversity of approaches examined in Section 7 below [19].

The TRIPS Agreement (1994) supplements the Berne Convention with enforcement obligations of particular relevance to cross-border NFT infringement. Article 41 requires members to make available effective remedies against IP infringement, including injunctions, damages, and destruction of infringing goods, while Article 50's provisional-measures regime — permitting *ex parte* relief where delay is likely to cause irreparable harm or where evidence is at risk of destruction — is of particular significance where an infringer can transfer a token to an anonymous address in another jurisdiction within seconds [28].

The WIPO Copyright Treaty (1996, in force 2002) was the first international instrument specifically addressed to the challenges of the digital environment, introducing the right of communication to the public (Article 8) and the right of distribution (Article 6). Article 8 is the key norm for NFTs: making a digital work available for interactive, on-demand access through the internet plainly falls within its scope and requires the rights holder's authorization. A significant practical complication is that, on most NFT marketplaces, viewing the associated media file is technically decoupled from holding the token — the file remains publicly accessible (typically via IPFS or a direct link) irrespective of who holds the token — meaning that the right of communication to the public may be infringed independently of any sale of the token itself. Articles 11 and 12 WCT, on technological protection measures and rights-management information respectively, are also relevant: Article 11 supplies a legal basis for protecting smart-contract usage restrictions, while Article 12's prohibition on unauthorized removal or alteration of rights-management information corresponds naturally to NFT metadata (creator name, description, media link), offering a potential international-law basis for protecting against unauthorized tampering with authorship information embedded in a token's metadata [29].

In sum, the existing international framework is substantively adequate to protect NFT-associated works: such works are protected on ordinary copyright principles, national treatment secures cross-border protection without registration, and the WCT provides a basis for combating unauthorized communication to the public and circumvention of technological measures. Three gaps nonetheless remain: (1) asymmetry in resale-right protection stemming from the optional character of Article 14ter; (2) the absence of special choice-of-law rules for cross-border token transactions; and (3) the absence of any rule establishing the default scope of rights transferred upon an NFT's alienation. Closing these gaps is the substantive core of the model-provisions proposal developed in Section 8 [19], [29].

The principal instrument governing digital-asset circulation in Russia is Federal Law No. 259-FZ of 31 July 2020 “On Digital Financial Assets, Digital Currency” (Law No. 259-FZ), in force since 1 January 2021. Under Article 1, digital financial assets (DFAs) are defined through a closed list of certified rights — monetary claims, rights under issue-

grade securities, and participation rights in a non-public joint-stock company — which by construction excludes most NFTs, since an NFT certifies not a monetary claim but the fact of “ownership” of a unique object, unless an issuer deliberately structures an NFT issuance as a DFA by embedding a monetary claim (e.g., a right to a share of a work’s revenue) in the issuance decision. Such structuring exists but remains limited, given the cost and complexity of the licensed-operator procedure required for DFA issuance [4].

A related instrument, “utility digital rights” (UDR) under the 2019 crowdfunding-platform law, permits a right to demand a thing, an exclusive right to the results of intellectual activity, or a right to use such results — a construction theoretically better suited to NFTs, though practical application is again constrained by the requirement of issuance through a registered investment-platform operator, which is poorly suited to the mass, decentralized circulation of NFTs on international marketplaces.

Two groups of provisions in the Civil Code of the Russian Federation bear on the legal classification of NFTs. Article 1225 (Part Four) sets out a closed list of protectable results of intellectual activity and means of individualization; NFTs as such do not appear on this list, meaning that the token itself is not recognized as an independent IP object under Russian law — protection can attach only to the associated work, if it falls within one of the enumerated categories. Article 1259, by contrast, provides an open, illustrative list of categories of copyright works, including an express residual clause covering “other works,” which creates a theoretical basis for recognizing a “digital work” as an independent category of artistic work. It follows that a work associated with an NFT is protected by copyright on ordinary principles where it satisfies the criteria of originality and objective expression, while the token itself, performing a purely technical record-keeping function, requires no separate protection [27].

Article 141.1 of the Civil Code, introduced in 2019, establishes the general category of “digital rights” as a species of property right whose content is determined by the rules of a qualifying information system, laying general groundwork for the more detailed regulation found in Law No. 259-FZ [4], [27].

The absence of special NFT regulation generates six systemic problems. First, terminological uncertainty: Russian law contains no legal definition of “NFT” or “non-fungible token,” forcing courts to classify disputed tokens by analogy to existing categories, with attendant risks of inconsistent outcomes. Second, a conceptual tension between the closed list of IP objects in Article 1225 and the need to protect new forms of digital creativity, particularly generative art collections in which the specific visual output of each token is determined algorithmically rather than by a direct human creative decision with respect to each individual instance. Third, uncertainty as to the scope of rights transferred upon an NFT’s alienation: under the general principle that transfer of ownership of a thing does not entail transfer of intellectual rights in a work embodied in that thing (Article 1227(1)), the default rule, absent explicit contractual provision, is that acquiring an NFT conveys no exclusive right and not even a simple license — though this position is contested in doctrine, since it arguably devalues the economic sense of the

purchase for an ordinary buyer. Fourth, the absence of special regulation for smart-contract royalty mechanisms: Russian law recognizes *droit de suite* only for a limited category of works (Article 1293) and only in the case of public resale through an intermediary, leaving smart-contract royalties on private or peer-to-peer resale without either explicit legal recognition or a settled tax treatment. Fifth, the absence of tailored remedies against “fraudulent minting” – minting an NFT based on a work whose creator has not consented – which, though formally covered by general copyright-infringement remedies (Articles 1252, 1301), is difficult to enforce given anonymity, cross-border platforms, and the absence of a unified copyright registry. Sixth, a complete absence of regulation for metaverse and virtual objects falling outside traditional IP categories (corresponding to the RDA-3 subclass), whether in property law, obligations law, or IP law [27].

Russian doctrine has also grappled with the legal status of smart contracts. Article 309(2) of the Civil Code, introduced in 2019, permits contractual performance without separately expressed additional consent (a pre-given acceptance) or performance using information technology specified by the terms of the transaction – a provision that supplies a direct legal basis for recognizing the validity of automated (algorithmic) contract performance, conceptually aligned with the nature of a smart contract. The more persuasive doctrinal position treats smart-contract code not as a substitute for a civil-law contract in the traditional sense but as a technical means of automating its performance; the underlying contract arises from the totality of the parties’ legally significant conduct (listing, transaction, acceptance of marketplace terms), with the smart contract merely fixing and executing the resulting transfer technologically. On this view, marketplace terms of service – which typically address governing law, the scope of rights transferred, and dispute resolution – become decisive for the legal regime of a given transaction [18].

Judicial practice specifically concerning NFTs remains very limited in Russia, reflecting both the relative novelty of the phenomenon and the comparatively low involvement of Russian market participants in the international NFT market. Ruling No. 2-P of 20 January 2026, in which the Constitutional Court of the Russian Federation found Article 14(6) of Law No. 259-FZ unconstitutional insofar as it obstructed judicial protection of claims relating to lawfully held digital currency acquired other than through mining, is nonetheless of systemic importance: it establishes, for the first time at constitutional level, that bona fide holders of digital assets are entitled to full judicial protection of their property interests notwithstanding gaps in sectoral legislation – a logic that may, by analogy, extend to NFT-related disputes [30].

Summarizing, the Russian model is characterized by: (1) the absence of a special statutory definition of NFT; (2) indirect application of general IP norms (Part Four of the Civil Code) to NFT-associated works, without special regulation of the token itself; (3) a theoretical but practically underused possibility of classifying certain NFTs as DFAs or UDRs; (4) very limited case law directly on NFTs, against a more developed body of case

law on digital currency; and (5) a cautious Bank of Russia posture and the absence of dedicated regulatory initiatives on NFTs specifically [31], [32], [33].

Uzbekistan exemplifies a fundamentally different regulatory strategy: rapid, experimental rule-making, conducted primarily through presidential decrees, with the most settled solutions subsequently codified at the legislative level. The foundation was laid by Presidential Decree No. PP-3832 of 3 July 2018 “On Measures to Develop the Digital Economy,” which introduced the broad concept of a “crypto-asset,” defined as a property right representing a set of digital records in a distributed ledger that has value and an owner. Unlike the Russian approach, this definition is deliberately expansive: it is not tied to a closed list of certified rights but is functional, turning on existence in a distributed ledger, economic value, and identifiable ownership — a construction that, in principle, can encompass NFTs without any need for special mention [5].

Presidential Decree No. PP-4168 of 2 September 2022 “On Additional Measures to Create Favorable Conditions for the Introduction of Blockchain Technology” further developed the regulatory framework, and the National Agency of Prospective Projects (NAPP) was created as the state body responsible for regulating and licensing the crypto-asset market, capital markets, and related areas of e-commerce. A significant further step is a special regime for stablecoins and tokenized securities, effective from 1 January 2026, permitting resident legal entities to issue tokenized securities on licensed exchanges and, notably, permitting stablecoins to be used as a means of payment — a marked departure from the general prohibition on using crypto-assets for payment purposes that persists in Russia [34].

Uzbekistan’s Law “On the Digital Economy” consolidates the general principles and conceptual apparatus of the digital economy at the legislative (rather than merely decree) level, reflecting a broader pattern in Uzbek law-making: experimentation at the level of by-laws and regulatory sandboxes, followed by codification of the most successful solutions in statute. Uzbekistan’s Law “On Copyright and Related Rights” follows a model broadly similar to the Russian approach and, like Russian law, contains no special provisions on NFTs, meaning the same token/work dichotomy logic applies: the token is a technical means, the work is the object of protection [20], [35].

Whereas Russian law proceeds from a closed list of IP objects, Uzbek crypto-asset law proceeds from a broad, functional definition, which creates a theoretical possibility for a more flexible integration of NFTs into the existing regulatory system, since the crypto-asset definition is not confined to financial or monetary claims. This breadth, however, produces the mirror-image problem: the absence of any special differentiation between NFTs representing IP objects and NFTs unconnected to IP (virtual land, in-game items), or between NFTs and other categories of crypto-assets (payment, investment), which results in insufficient legal certainty regarding the applicable protection regime. Uzbek law, regulating crypto-asset circulation chiefly from a public-law standpoint (market-participant licensing, anti-money-laundering, taxation), pays comparatively

little attention to civil-law aspects — in particular, the scope of IP rights transferred upon an NFT's alienation.

Uzbekistan's institutional arrangements offer notable comparative advantages: NAPP, as a single specialized regulator, is capable of issuing operative guidance tailored to specific token types, including NFTs, without a lengthy legislative process; the IT Park special economic zone, whose residents enjoy substantial tax incentives, creates favorable conditions for blockchain start-ups, including NFT platforms and marketplaces; and the use of regulatory sandboxes allows new solutions to be tested under controlled conditions before nationwide rollout, in line with practice in the United Kingdom and Singapore. The licensing of a major international exchange (Binance) to serve Uzbek residents further signals that the international crypto community regards the Uzbek regulatory model as comparatively mature, in contrast to the more restrictive Russian regime, under which crypto exchanges in the traditional sense cannot obtain a full license to serve retail clients.

The Uzbek model nonetheless carries drawbacks: the absence of special NFT legislation mirrors the Russian gap in respect of the civil-law dimension, chiefly the scope of transferred IP rights; the predominantly sub-statutory character of regulation (presidential decrees, NAPP acts), while operationally advantageous, creates a degree of legal instability, since by-laws can be amended or repealed considerably more easily than statutes; and the concentration of regulatory functions in a single agency, while conducive to speed, may under-represent the interests of various market participants relative to the multi-regulator competition characteristic of the U.S. model.

In summary, the Uzbek model is progressive and fast-moving in respect of the general foundations of crypto-asset and tokenized-security circulation, yet — like the Russian model — retains a substantial gap regarding special regulation of NFTs as an object (or carrier of an object) of intellectual property. The institutional solutions tested in Uzbekistan (a dedicated regulator, sandboxes, special economic zones) are of considerable interest for recommendations directed at improving Russian legislation.

The United States represents a third model, fundamentally different from both the Russian and Uzbek approaches: there is no single federal statute specifically addressed to digital assets generally, or to NFTs in particular. Regulation instead emerges from the application of an existing body of statutes to new technological phenomena, supplemented by active judicial law-making through interpretation and the development of case law, and by the regulatory practice of specialized federal agencies.

The foundational statute governing copyright objects is the Copyright Act of 1976 (17 U.S.C.), which protects original works of authorship fixed in any tangible medium of expression now known or later developed, through an illustrative, non-exhaustive list of protected categories (§ 102(a)). As with Article 1259 of the Russian Civil Code, the list's open character provides a flexible basis for extending copyright protection to new forms of digital creativity, including NFT-associated works. The U.S. Copyright Office consistently maintains that it is the underlying work — the image, video, or audio file —

rather than the blockchain metadata record, that is the proper subject of registration; applicants seeking to register an NFT-associated work submit the digital file itself, not a reference to the blockchain transaction [6].

The Digital Millennium Copyright Act (DMCA, 1998), and in particular the § 512 safe-harbor regime, is of substantial practical importance for NFT marketplaces, which typically incorporate DMCA notice-and-takedown procedures into their terms of service, allowing rights holders to demand the delisting of NFTs minted from their works without authorization. A significant technological limitation persists, however: delisting from a given marketplace does not remove the underlying blockchain record, which continues to exist independently of any centralized platform – meaning the DMCA mechanism can suppress further commercial exploitation through a given venue but cannot eliminate the disputed record from the distributed ledger itself [36].

The Securities and Exchange Commission (SEC) occupies a central place in the U.S. regulatory landscape for digital assets generally. Because U.S. securities law defines “security” through the broad, flexible “investment contract” category rather than a closed list of specific instruments, the SEC retains considerable discretion in classifying new digital-asset types. The governing instrument remains the Howey test, as articulated in *SEC v. W.J. Howey Co.*, 328 U.S. 293 (1946). SEC practice toward NFTs is case-specific: “art” NFTs acquired chiefly for aesthetic or collecting reasons, without a shared entrepreneurial venture among holders, generally fail the second and fourth Howey prongs, whereas NFT projects expressly promising holders a share of future project revenue, dividends, or other passive investment returns may be properly classified as investment contracts subject to SEC jurisdiction [21], [22].

The Commodity Futures Trading Commission (CFTC) is the second key federal regulator, traditionally classifying major cryptocurrencies as commodities under the Commodity Exchange Act, which grounds CFTC jurisdiction over derivatives referencing such cryptocurrencies. CFTC jurisdiction over NFTs proper is narrower, potentially engaged only with respect to derivatives referencing NFT-collection price indices or fractionalized NFTs recognized as commodity interests. The parallel jurisdiction of the SEC and CFTC, supplemented by FinCEN’s anti-money-laundering authority and IRS tax rules, produces a fragmented, multi-layered federal regulatory landscape in which market participants must independently determine which regulator’s jurisdiction applies to their activity.

The first-sale doctrine, codified at 17 U.S.C. § 109(a), limits a copyright holder’s exclusive distribution right by permitting the owner of a lawfully made copy to sell, lend, or otherwise dispose of that particular copy without the rights holder’s consent. Its applicability to NFTs is one of the most contested questions in contemporary U.S. copyright doctrine. In *Capitol Records, LLC v. ReDigi Inc.*, 910 F.3d 649 (2d Cir. 2018), the Second Circuit held the first-sale doctrine inapplicable to digital music files resold through the ReDigi platform, because the technological process of “reselling” a digital file entails creating a new copy on the purchaser’s device rather than the physical transfer

of a single existing tangible copy contemplated by § 109(a). NFTs present a more favorable case for application of the doctrine than ordinary digital files, since blockchain architecture ensures that transferring a token does not create a new copy but instead updates the ownership record of a single existing token — conceptually closer to a physical transfer than to the ReDigi copying scenario. The technological separation between the token and its associated off-chain media file, however, complicates matters, since transferring an NFT in the strict sense transfers a blockchain record referencing a work rather than the work itself within the meaning of § 109(a); no binding precedent has yet resolved the question directly. The widespread practice of accompanying NFT collections with license agreements that expressly limit the purchaser to a revocable personal-use license, without conveying a distribution right, further complicates reliance on the first-sale doctrine as a mandatory rule capable of overriding contrary contractual terms [6], [37].

Hermès International and Hermès of Paris, Inc. v. Mason Rothschild, No. 1:22-cv-00384 (S.D.N.Y. 2023), is the first fully tried precedent addressing IP rights (specifically trademark rights) in connection with NFTs. The defendant, an artist operating under the pseudonym Mason Rothschild, created and sold a hundred-piece NFT collection, “MetaBirkins,” depicting fur-covered renderings of Hermès’s well-known Birkin bag. Hermès sued for trademark infringement, dilution, cybersquatting, and unfair competition; the defendant invoked the First Amendment and the *Rogers v. Grimaldi* test, under which use of a mark in an expressive work is protected where the use (1) has at least minimal artistic relevance to the work and (2) does not explicitly mislead consumers as to source. On 8 February 2023, a jury found for Hermès on all three claims, awarding USD 133,000 in damages, on the ground that the defendant had intentionally sought to create consumer confusion regarding an affiliation with Hermès, placing his conduct outside *Rogers* protection. On 23 June 2023, the presiding judge granted a permanent injunction requiring transfer of the metabirkins.com domain and disgorgement of profits and royalties, while declining to order transfer of the NFTs and associated smart contracts themselves, reasoning that the narrower remedy sufficed to eliminate ongoing consumer confusion while avoiding First Amendment complications given that the MetaBirkins NFTs were, at least in part, expressive works [38], [39].

The case carries three doctrinal lessons. First, it demonstrates that existing IP institutions (here, trademark law) can be applied to NFT-associated digital works without special legislation, through interpretive adaptation of the existing toolkit (the Lanham Act, the *Rogers* test, dilution doctrine). Second, it illustrates the limits of First Amendment protection: artistic form does not automatically immunize conduct from trademark liability where consumer confusion is intended. Third, the court’s refusal to order transfer of the NFTs themselves reveals a practical limitation of traditional judicial remedies applied to blockchain assets: an injunction proved effective in halting commercial exploitation through centralized channels (the domain, advertising platforms) but did not eliminate the disputed blockchain records as such. The case

remains under appellate consideration in light of the Supreme Court's subsequent clarification of the Rogers framework in *Jack Daniel's Properties, Inc. v. VIP Products LLC*, 599 U.S. 140 (2023) [38], [39], [40].

A second significant dispute arose between Miramax and director Quentin Tarantino over NFTs based on handwritten script pages and unpublished commentary recordings relating to *Pulp Fiction*. Tarantino asserted that the relevant rights had been reserved to him under "book publication rights" in his original agreement with Miramax; Miramax countered that the broad grant of rights covering "all media now known or hereafter devised" encompassed NFT issuance, and sued for breach of contract, trademark infringement, and unfair competition. The parties settled in August 2022, so no binding precedent resulted, but the dispute illustrates a problem common to all three jurisdictions studied: the interpretive uncertainty surrounding pre-existing licensing agreements when applied to a commercialization channel that did not exist at the time of contracting — a gap that calls for either broad teleological interpretation or a default statutory rule allocating rights in new, previously non-existent uses among rights holders in the entertainment industry [41].

Given the federal structure of the United States, individual states function as "laboratories of democracy," testing distinct regulatory models. Wyoming has taken a leading, permissive position: since 2019 it has enacted Special Purpose Depository Institution legislation, amended its Uniform Commercial Code to recognize digital assets (including, on a broad reading, NFTs) as property capable of serving as collateral under UCC Article 9, and recognized DAOs as a distinct form of limited liability company — collectively providing a more determinate property-law basis for NFTs than the federal-level uncertainty over securities or commodity classification. New York, by contrast, has taken a more consumer-protection-oriented, conservative stance: the Attorney General has repeatedly invoked the Martin Act against crypto and NFT platforms, and the New York State Department of Financial Services administers the "BitLicense" regime, which may reach NFT marketplaces and issuers whose activities involve exchanging NFTs for fiat currency or other forms of intermediation falling within the broad definition of "virtual currency business activity." The contrast between Wyoming and New York illustrates the regulatory competition inherent in the federal structure and the added complexity it creates for market participants structuring cross-border and inter-state operations [42].

Discussion

The comparative-law method employed in this study aims not merely to catalogue differences among the three national systems but to identify the deeper regularities that explain why each jurisdiction has chosen its particular solutions, and which of those solutions can be regarded as more effective in advancing legal certainty, protecting authors and consumers, and fostering technological innovation.

First, all three jurisdictions converge on a single conceptual approach that distinguishes the NFT as a technical instrument from the work as the object of legal

protection — the WIPO-articulated dichotomy between *corpus mysticum* (the incorporeal essence of the work, protected by copyright) and *corpus mechanicum* (the material or digital carrier in which the work is embodied). WIPO's own position, expressed in its publications on the metaverse and NFTs, holds that as long as copyright grants an exclusive right in original works of authorship (*corpus mysticum*) distinct from ownership of any digital object in which the work is embodied (*corpus mechanicum*), the legal regime remains fundamentally unchanged regardless of the technological form of embodiment. It follows that none of the three legal systems requires a wholesale revision of foundational copyright principles to bring NFTs within its protective scope; only targeted adaptation of specific institutions — the resale right, the first-sale doctrine, the default scope of transferred rights — is needed [10], [11].

Second, a uniform gap appears across all three jurisdictions regarding special regulation of NFTs as an independent civil-law phenomenon: none of the three defines NFTs, establishes a default rule on the scope of rights transferred upon alienation, or resolves conflicts between the technological (blockchain) and the legal (contractual) regime of rights transfer. This gap is systemic rather than incidental, and it is independent of the chosen national regulatory strategy — codified special legislation in Russia, flexible sub-statutory regulation in Uzbekistan, or case law in the United States — which suggests that a solution is best sought at the international, rather than purely national, level.

Third, the depth of case law correlates not with the quality of legislative regulation as such but with the volume of a jurisdiction's residents' actual participation in the international NFT market. The United States, as the largest NFT market in the world, inevitably generates more disputes, and hence more precedent, than Russia or Uzbekistan, whose markets are considerably smaller and, in Russia's case, further constrained by sanctions-related and infrastructural barriers to international settlement. It follows that the absence of case law in Russia and Uzbekistan cannot be read as evidence of an absence of underlying legal problems; it more plausibly reflects lower transaction intensity than regulatory efficacy.

Fourth, tax treatment in all three countries tends to assimilate digital-asset transactions into existing categories (securities, property) rather than creating regimes tailored to the economic peculiarities of unique, non-fungible assets and their embedded automatic royalty mechanisms. Fifth, institutional structures differ markedly: Russia disperses regulatory authority among several bodies (the Bank of Russia, the Ministry of Finance, the Federal Tax Service); Uzbekistan centralizes authority in a single specialized regulator (NAPP); and the United States exhibits a federated multiplicity of regulators and jurisdictions (SEC, CFTC, state regulators). None of these institutional models is universally optimal without regard to the specific legal and politico-economic context of the state concerned.

Sixth, all three jurisdictions display a comparable tendency to delegate substantial regulatory functions to self-regulating marketplace operators, whose internal DMCA-style notification policies, authorship-verification mechanisms at minting, token-

blocking systems, and standard-form terms of service have, in a normative vacuum, acquired quasi-regulatory force. Self-regulation, however, has systemic limitations: it covers only centralized platforms, leaving decentralized marketplaces (Uniswap, LooksRare, Blur) — whose transaction volumes continue to grow — outside its reach; it binds only voluntary participants and lacks enforcement mechanisms beyond a given platform's ecosystem; and it is shaped by commercial rather than rights-protective priorities, generating an evident conflict of interest when setting standards for the protection of authors and consumers. The optimal regulatory model should not compete with market self-regulation but should incorporate it into the official normative system — establishing minimum mandatory standards as a condition of marketplace legitimacy while offering regulatory advantages to operators who voluntarily adopt heightened self-regulatory standards, on the model of the DMCA safe harbor.

The technological features of NFTs described above — decentralization, the absence of a single administrator, and global accessibility — make cross-border circulation the norm rather than the exception. A transaction may involve a seller in Russia, a buyer in the United States, a marketplace incorporated in a third jurisdiction, and a cryptocurrency issued by a protocol with no geographic tie at all. This multilayered cross-border character raises problems that cannot be resolved by any single national legal system acting alone.

Traditional private-international-law connecting factors — the place of contracting (*lex loci contractus*), the location of the thing (*lex rei sitae*), the personal law of the parties, and the place of the tort (*lex loci delicti commissi*) — each encounter serious difficulty when applied to NFTs. A blockchain transaction has no single geographic “place” of execution in any meaningful sense, since it is verified simultaneously by a geographically distributed set of nodes; the contractual dimension of a marketplace transaction is, at best, artificially tied to the location of the platform's servers or to the governing law selected in its terms of service. The *lex rei sitae* connecting factor fails even more fundamentally, since a distributed ledger has no single geographic location, being replicated across nodes worldwide; proposed palliatives — tying the connecting factor to the token holder's domicile, to the registered location of the platform operator, or to the personal law of the NFT's creator — have achieved no universal doctrinal or legislative acceptance in any of the three jurisdictions studied.

Special choice-of-law rules for digital-asset transactions exist, where at all, only fragmentarily. Article 1(5) of Russian Law No. 259-FZ, for instance, provides that a foreign nominee holder of digital financial assets records and transfers rights in DFAs credited to other persons in accordance with its personal law — one of the few direct choice-of-law provisions concerning digital assets in Russian law, though it is not addressed to NFTs and applies only to the narrow category of foreign nominee holders. No comparable special choice-of-law provisions specifically addressed to NFTs could be identified in Uzbek or U.S. federal law [4].

Doctrine has accordingly proposed a technologically neutral connecting factor for digital assets, not premised on territorial localization (which is objectively impossible for decentralized systems) but on a functional criterion — for instance, the law chosen by the parties in the smart contract or marketplace terms of service (*lex electronica*, by analogy to the principle of party autonomy, *lex voluntatis*), or the law of the country with which the relationship has the closest connection, determined by reference to the parties' domicile, the currency of settlement, and the language of the platform interface.

The pseudonymity of blockchain transactions compounds enforcement difficulties in a distinctly cross-border way. Within a single jurisdiction, identifying an infringer hiding behind a pseudonymous address is difficult but generally solvable, given tools such as compelled disclosure by regulated KYC intermediaries, blockchain analytics, and discovery mechanisms. In the cross-border context, however, the infringer and associated assets may be located in a jurisdiction lacking mutual legal assistance arrangements with the state where the infringement occurred, or one that declines international cooperation for other reasons; even successful de-anonymization and a favorable judgment in one jurisdiction requires recognition-and-enforcement proceedings elsewhere, which are frequently subject to substantial procedural barriers and offer no guarantee of success; and even full satisfaction of a rights holder's claim in one jurisdiction (an injunction of the kind granted in *Hermès v. Rothschild*) does not prevent an infringer from continuing analogous conduct from another jurisdiction that does not recognize that judgment.

Determining international jurisdiction for cross-border NFT disputes presents a third principal problem. The most common practical solution — NFT marketplace terms of service designating governing law and a forum (typically courts or arbitration at the operator's place of incorporation, e.g., Delaware, New York, Singapore, or the British Virgin Islands) — binds only the platform and its direct users and does not reach disputes between third parties, such as an original rights holder and an anonymous unauthorized minter with whom no contractual relationship, and hence no forum-selection clause, exists. In the absence of a contractual forum, general rules of international jurisdiction apply, each carrying difficulties analogous to those described for choice of law: Russian procedural law generally requires some territorial connection to the defendant that a foreign, asset-less infringer will typically lack; U.S. law applies the "minimum contacts" doctrine of *International Shoe Co. v. Washington*, 326 U.S. 310 (1945), and its "purposeful availment" refinement for internet-based disputes, whose application to NFT disputes remains at an early and unsettled stage of development; and Uzbek procedural law, broadly following continental-European models similar to Russia's, faces comparable difficulties, compounded by the total absence, at present, of Uzbek case law addressing international jurisdiction in NFT disputes [43].

The cumulative effect can be characterized as a "jurisdictional vacuum" or an inverted forum-shopping problem: rather than the classical difficulty of selecting the most favorable forum among several available options, NFT disputes often present the opposite difficulty — the absence of any clearly competent jurisdiction at all — which

objectively lowers the level of legal protection available to market participants and creates space for impunity on the part of infringers operating from jurisdictions with weak enforcement or a refusal to recognize foreign judgments.

A final cross-border dimension concerns the territoriality principle in copyright law, reflected in Article 5(2) of the Berne Convention, under which the scope of protection and the available remedies are governed exclusively by the law of the state in which protection is sought. Applied to an NFT accessible for purchase simultaneously from anywhere in the world, territoriality theoretically compels a rights holder seeking comprehensive protection to pursue parallel proceedings in every jurisdiction where an infringing token was purchased, or to obtain a judgment in a single “base” jurisdiction with global effect — an outcome the *Hermès* case shows to be practically elusive, since the court there confined itself to measures effective against the U.S. domain and the defendant’s conduct rather than attempting a global blockchain-level prohibition. The Berne Convention’s national-treatment principle mitigates, but does not eliminate, this problem: because all three jurisdictions are Berne Union members, an author’s work automatically enjoys protection in the other two on national-treatment terms without formalities, meaning the underlying substantive protection is largely adequate; the practical difficulty lies chiefly in enforcement — anonymity, jurisdictional conflict, and the difficulty of enforcing foreign judgments [19], [38].

A related asymmetry concerns Article 14ter’s optional resale right, which is further limited in scope to original works of art and original manuscripts, raising the separate question whether an NFT qualifies as an “original” in the traditional sense or merely as a digital representation of one. The United States does not recognize *droit de suite* at the federal level (repeated legislative proposals, including the American Royalties Too Act, have not been enacted), creating an asymmetry in the cross-border application of smart-contract royalty mechanisms: in jurisdictions recognizing a resale right (Russia, within the limits of Article 1293; European Union member states implementing Directive 2001/84/EC), such payments may receive direct legal characterization as an exercise of a statutory right, whereas in the United States they remain a matter of private contractual practice with no direct grounding in federal copyright law [19], [27].

Finally, the application of Financial Action Task Force (FATF) recommendations on “virtual assets” and “virtual asset service providers” to certain categories of NFTs — particularly those used chiefly as a store of value or investment instrument, corresponding to the IDA class or to hybrid representative assets with a pronounced investment component — and divergent implementation across the three jurisdictions (client-identification requirements for DFA exchange operators under Article 17 of Russian Law No. 259-FZ; NAPP licensing requirements in Uzbekistan; Bank Secrecy Act and FinCEN requirements in the United States) add a further layer of compliance fragmentation for market participants operating across jurisdictions. Traditional consumer-protection mechanisms — rights of withdrawal, rights to return defective goods, and consumer-domicile special jurisdiction — are similarly poorly adapted to the

irreversible nature of blockchain transactions, leaving open, for instance, whether a consumer who purchases an NFT on a foreign marketplace can meaningfully exercise a statutory right of withdrawal when the underlying transfer is technologically irreversible without the counterparty's cooperation.

Six specific problems identified in Section 6.1 justify six corresponding legislative measures. First, Part Four of the Civil Code should be supplemented with a special provision (proposed as Article 1259.1, "Special Features of Circulation of Works Certified by a Non-Fungible Token") that: (a) legally defines an NFT as a unique record in a distributed ledger certifying that a specified person holds a right in a specific object; (b) expressly provides that the NFT itself is not a copyright object but merely a technical means of fixing and transferring rights in the associated object (where that object satisfies the criteria of Article 1259); and (c) establishes a default (non-mandatory) rule that, absent an express contrary agreement, acquiring an NFT does not transfer the exclusive right in the associated work but does grant the acquirer a simple (non-exclusive) license to use the work in ways customary for the type of NFT concerned (display, personal use, resale of the token) — a "minimum implied license" presumption designed to align the law with the reasonable expectations of ordinary market participants [27].

Second, the automatic royalty mechanisms embedded in NFT smart contracts should be given direct legal recognition as an exercise of the resale right under Article 1293 of the Civil Code, with the scope of that article extended to NFT-associated digital works regardless of whether resale occurs through a professional intermediary (as the current text requires) or directly between private individuals on a decentralized marketplace — an extension made administratively feasible precisely because a smart contract's technological transparency removes the traditional practical obstacle to administering the resale right in private transactions: the absence of reliable information about the fact and price of resale [27].

Third, Law No. 259-FZ should be amended to permit the issuance of digital financial assets certifying rights to the results of intellectual activity, and not merely monetary and corporate rights as under the current Article 1(2), by analogy with the existing but ill-suited utility-digital-rights construction, while removing the excessive requirement of mandatory engagement of a licensed investment-platform operator for every issuance. This would create a properly defined legal category for NFTs associated with IP objects (corresponding to subclass RDA-1) without artificially forcing such tokens into the financial-instrument mold [4].

Fourth, a simplified rapid-response mechanism against fraudulent minting should be introduced, modeled on the existing website-blocking procedure under Article 15.2 of the Federal Law "On Information, Information Technologies and Information Protection," enabling rights holders to request that Russian search engines and information intermediaries restrict Russian users' access to disputed NFT listings on foreign marketplaces without first establishing the anonymous infringer's identity as a precondition for interim relief. Fifth, NFTs associated with IP objects (and, prospectively,

with metaverse and virtual real-estate objects and in-game items) should be included among the areas eligible for the experimental legal regimes (“regulatory sandboxes”) already provided for under Article 1.1 of Law No. 259-FZ, allowing the above proposals to be tested under controlled conditions before universal application, following the Uzbek model of staged, experimental law-making.

Because the Uzbek institutional model – NAPP, the IT Park special economic zone, regulatory sandboxes – is itself broadly effective and worthy of emulation elsewhere (including by Russia, per the fourth recommendation above), recommendations here focus on substantively filling existing institutions with IP-specific content rather than institutional redesign. First, NAPP should be expressly empowered to issue guidance interpreting the application of the Law “On Copyright and Related Rights” to crypto-asset-associated works, on the model of U.S. Copyright Office guidance practice, thereby using Uzbekistan’s institutional agility to promptly fill the gap concerning the scope of rights transferred upon an NFT’s alienation without a lengthy legislative process [35].

Second, IT Park resident status and its accompanying tax benefits should be extended specifically to companies developing and administering NFT platforms oriented toward IP objects (as distinct from platforms oriented toward extra-IP assets such as in-game items or virtual land), coupled with compliance obligations for such residents: mandatory identity verification of the minting party (which could substantially reduce the severity of the fraudulent-minting problem) and mandatory disclosure, in token metadata, of the governing law and the scope of IP rights transferred. Third, the resale right should be developed for NFT-associated visual-art works, by analogy with the proposed extension of Article 1293 of the Russian Civil Code, expressly recognizing the legal force of smart-contract royalty mechanisms as an appropriate means of exercising the author’s right – consistent with the generally progressive, technologically oriented trajectory of Uzbek digital-economy legislation (stablecoin legalization, tokenized securities). Fourth, a dedicated chapter on IP-representative crypto-assets (RDA-1 and RDA-2) should be codified at the statutory rather than decree level, within the Law “On the Digital Economy” or as a separate special law, converting solutions already tested in regulatory sandboxes into a source of stronger legal guarantees for long-term investment in the sector [20], [27].

First, Congress should enact a federal digital-assets statute (building on previously introduced but unenacted proposals such as the Digital Commodity Exchange Act and related legislative initiatives aimed at resolving SEC/CFTC jurisdictional uncertainty) containing a dedicated section on NFTs and other representative digital assets that: (a) establishes a presumption that NFTs not involving shared entrepreneurial participation by holders in project profit distribution are not securities and therefore fall outside SEC jurisdiction, eliminating the case-by-case Howey-test uncertainty described in Section 6.3; and (b) sets minimum disclosure standards for NFT-collection issuers, broadly modeled on Wyoming’s approach, including mandatory disclosure of where associated

metadata and media files are stored, mitigating the “devalued NFT” problem discussed in Section 2 [22], [42].

Second, Congress should legislatively confirm the applicability of the first-sale doctrine (17 U.S.C. § 109(a)) to NFTs where the token’s technological architecture guarantees uniqueness and non-duplicability of transfer (i.e., no possibility that the seller retains an identical copy after transferring the token to the buyer), resolving the uncertainty created by ReDigi’s potential (but unconfirmed) application to NFTs and clearly distinguishing the NFT regime from that governing ordinary copyable digital files, for which the restrictive ReDigi approach remains appropriate. Third, federal copyright law should incorporate a limited form of *droit de suite* applicable specifically to NFTs associated with visual-art works, eliminating the asymmetry between the United States and the other jurisdictions studied and thereby facilitating cross-border administration of smart-contract royalty mechanisms; the technical ease of administering such a right for NFTs – given the transparency and automatability of blockchain transactions – removes the administrative-cost objection that has historically been the principal argument against adopting *droit de suite* in U.S. law for physical artworks. Fourth, the Uniform Law Commission should promulgate a uniform digital-assets act, on the model of the Uniform Commercial Code, that states could voluntarily adopt, extending Wyoming-tested solutions (such as recognizing digital assets as UCC Article 9 collateral) to other states without requiring federal legislation, which faces substantial political obstacles in a closely divided Congress [6], [37], [42].

The most significant contribution of this study, from the standpoint of international-law harmonization, is a concept for optional model international provisions to be developed under WIPO auspices. WIPO is the natural institutional venue, given its accumulated experience adapting international IP regulation to new technologies – from the WIPO Copyright Treaty’s adaptation of the Berne Convention to the internet, to the WIPO Conversation on Intellectual Property and Frontier Technologies, whose seventh session specifically addressed blockchain, NFTs, and the metaverse. WIPO’s own methodological premise – that the question is not whether the law should adapt to the metaverse and NFTs, but whether the metaverse and NFTs should adapt to existing law, since the fundamental *corpus mysticum/corpus mechanicum* distinction remains valid regardless of technological form – directly corresponds to, and lends institutional credibility to, this article’s “dualism of NFTs” framework [10], [11], [19], [29], [44].

Rather than a new, self-standing treaty establishing a novel *sui generis* right (which would require a lengthy and politically difficult ratification process), the proposed WIPO Model Provisions on Representative Digital Assets should take the form of a recommendatory model law, following the precedent of WIPO’s model laws for developing countries in copyright and industrial property, and of the UNCITRAL Model Law on Electronic Commerce, which has been successfully incorporated into the domestic law of a substantial number of states without formal treaty ratification.

Substantively, the model provisions should comprise five blocks of norms, each directly responsive to the gaps identified in Sections 5–7. Block one would supply a unified definition of the NFT (representative digital asset) and its dualistic legal nature, fixing at the international level the default distinction between the token as a technical means of representation and the associated work as an independent object of protection, defeasible by contrary national legislation or party agreement. Block two would recommend a default rule on the scope of rights transferred upon an NFT’s alienation, in the form of a rebuttable “minimum implied license” presumption (paralleling the domestic proposal in Section 8.1), defeasible by an express agreement embodied in the smart contract or accompanying terms of service — directly responsive to the interpretive uncertainty illustrated by the *Miramax v. Tarantino* dispute. Block three would recommend extending Article 14ter of the Berne Convention to NFTs associated with visual-art works, regardless of whether resale occurs through a professional intermediary or directly between private parties, with express recognition of automatic smart-contract royalty mechanisms as an appropriate means of administering the right, thereby addressing the U.S./non-U.S. asymmetry identified in Section 7.2, while preserving the optional character that respects each state’s sovereign discretion over the scope of authors’ economic protections. Block four would recommend a functional, rather than territorial, choice-of-law rule for NFT transactions: a presumption in favor of the law expressly chosen by the parties in the smart contract or platform terms of service (by analogy to *lex voluntatis*), with a closest-connection test — weighing the parties’ domicile, settlement currency, and platform interface language — as a residual rule where no express choice has been made. Block five would recommend the creation, under WIPO auspices, of an optional international registry of NFT-associated works, modeled on the Madrid and Hague registration systems in industrial property, allowing authors to voluntarily register the creation of a work and its associated initial token, thereby generating an internationally recognized presumption of authorship and priority that could be invoked against bad-faith minters in any participating jurisdiction — a direct response to the fraudulent-minting and anonymity problems discussed in Section 7.2. Such a registry could plausibly be implemented as a decentralized protocol, verifiable independently of any single centralized administrator (consistent with the underlying technology), while carrying formal recognition under the model provisions among participating states [19], [41].

Implementation is envisioned in four stages: intensifying the existing WIPO Conversation on Intellectual Property and Frontier Technologies with a focused mandate to draft concrete model norms rather than conduct general discussion; convening a dedicated expert working group of WIPO member states to prepare a draft; adoption of the model provisions by the WIPO General Assembly as a non-binding recommendatory instrument; and monitoring voluntary national incorporation, following the monitoring approach UNCITRAL applies to its own model laws.

CONCLUSION

Fundamental Finding: This comparative study has examined NFTs and digital assets as objects of intellectual property from an international-law perspective, based on the legislation of the Russian Federation, the Republic of Uzbekistan, and the United States. Several conclusions follow. First, NFTs constitute a technologically unique phenomenon whose legal nature cannot be adequately captured without understanding its technological substrate — blockchain, the smart contract, and the tokenization mechanism. Analysis across five distinguishing criteria (fungibility, functional purpose, divisibility, trading regime, and price-formation mechanism) demonstrates the fundamental difference between NFTs and cryptocurrencies or other digital-asset categories. The “dualism of NFTs” concept, separating the token as a technical instrument of representation (*corpus mechanicum*) from the associated work as an independent object of protection (*corpus mysticum*), finds independent confirmation in WIPO’s own stated position on the metaverse and NFTs. Second, the article has developed an original two-tier classification of digital assets by legal nature, distinguishing at the first tier four functional classes — payment (PDA), investment (IDA), functional (FDA), and representative (RDA) digital assets — and at the second tier differentiating representative assets by IP-protection regime into copyright-based (RDA-1), related-rights-based (RDA-2), and extra-IP (RDA-3) NFTs. The classification is jurisdiction-neutral and offers a common methodological instrument for further comparative research on digital assets. Third, sequential analysis of the three jurisdictions’ legislation shows that, notwithstanding fundamentally different institutional strategies — codified special legislation on digital financial assets in Russia, a centralized specialized regulator and experimental legal regimes in Uzbekistan, and case law with fragmented federal and state-level regulation in the United States — all three legal orders exhibit a uniform, systemic gap in the special regulation of the scope of IP rights transferred upon an NFT’s alienation. This gap is independent of the chosen national strategy and demonstrates the need for a solution at both the national and the international-law level. Fourth, examination of the leading precedents — *Hermès International v. Rothschild*, the first case establishing the applicability of trademark law to NFTs, and *Miramax v. Tarantino*, which illustrated the problem of interpreting pre-existing agreements in light of new uses of works — confirms that traditional IP institutions are applicable to NFT-associated digital works without the need for wholly new legal instruments, though they require targeted adaptation (the first-sale doctrine, the resale right) to the technological features of the blockchain environment. **Implication:** Sixth, on the basis of the comparative analysis, the article has formulated concrete *de lege ferenda* recommendations for each jurisdiction: for Russia, a special Civil Code provision on NFTs, an extension of the resale right under Article 1293, and improved remedies against fraudulent minting; for Uzbekistan, empowering NAPP to issue interpretive guidance and codifying sandbox-tested solutions at the statutory level; and for the United States, federal legislation resolving SEC/CFTC jurisdictional uncertainty and

incorporation of a limited form of *droit de suite* into federal copyright law. Seventh, and as the study's principal contribution, the article has developed a concept for WIPO Model Provisions on Representative Digital Assets comprising five substantive blocks: a unified definition and dualistic legal characterization of NFTs; a default "minimum implied license" presumption on alienation; an extension of Article 14ter of the Berne Convention to NFTs associated with visual-art works; a functional, rather than territorial, choice-of-law rule; and an optional international registry of NFT-associated works capable of counteracting fraudulent minting. The proposed concept follows the model of an optional, recommendatory instrument — on the pattern of existing WIPO model laws and the UNCITRAL Model Law on Electronic Commerce — which makes its practical realization plausible without the delay inherent in formal treaty ratification. The practical significance of these results lies in their potential use in law-making to improve digital-asset regulation in Russia and Uzbekistan, in judicial and regulatory practice in all three jurisdictions, and in the ongoing international discussion within WIPO, particularly through the WIPO Conversation on Intellectual Property and Frontier Technologies.

Limitation: Fifth, the cross-border character of NFT circulation generates a cluster of interconnected problems — choice-of-law uncertainty stemming from the inapplicability of traditional territorial connecting factors, difficulty identifying rights holders and infringers under conditions of blockchain pseudonymity, conflicts of judicial jurisdiction, asymmetry in the recognition of the resale right among the jurisdictions studied, and fragmentation of compliance requirements and consumer-protection standards — none of which can, in principle, be resolved by the law of any single state acting alone.

Future Research: Promising directions for further research include the legal regime of NFTs generated with the assistance of artificial-intelligence systems, the tax-law dimensions of cross-border representative-digital-asset circulation, and the detailed elaboration of model norms for each of the five blocks proposed above, in consultation with experts from WIPO member states.

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