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BUILDING AN IP GOVERNANCE FRAMEWORK FOR THE METAVERSE: LESSONS FROM TRADITIONAL AND DIGITAL IP REGIMES

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ABSTRACT

The emergence of the metaverse, a distributed, immersive, interactive digital ecosystem, has presented further difficulties for intellectual property (IP) law. The issue is that current IP rules are insufficient to properly control and enforce rights in a setting where virtual commodities, user-generated material, artificial intelligence (AI)-driven innovations, and blockchain-based assets like NFTs co-exist across countries. This paper investigates the conceptual and legal distance between conventional IP systems and the operational dynamics of the metaverse.

This study covers copyright, trademark, and patent laws from both conventional models and new digital versions. It examines closely how these systems fit metaverse settings like virtual real estate, digital art, avatar identity, and AI-generated works. The study also assesses instruments for legislative changes and enforcement, including DAO-led governance structures, token-based licensing, and smart contracts.

Examining international IP instruments (e.g., TRIPS, Berne Convention), digital rights management methods, and platform policies from top metaverse platforms using a doctrinal approach enhanced by comparative legal analysis. Results show that although current IP rules provide basic ideas, they neglect real-time creation, distributed content hosting, and jurisdictional uncertainty. Furthermore, promising for more agile implementation and transparent ownership models are smart contracts and blockchain-based attribution systems, according to the paper.

The study ends by arguing for a hybrid governance model combining adaptive digital systems with classic IP safeguards. Emphasizing private–public regulatory collaboration, interoperable rights recognition, and ethical use of automated enforcement, this paradigm grounds metaverse IP

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governance in both legal theory and technological viability. The paper provides pragmatic policy proposals for legislators, engineers, and platform designers.

Keywords: Metaverse, Intellectual Property, Digital Governance, NFTs, Smart Contracts, Jurisdictional Challenges.

1. INTRODUCTION

The metaverse signifies a radical change in the digital economy, one that crosses traditional limits of location, time, and identity. Combining immersive virtual experiences driven by augmented reality (AR), virtual reality (VR), blockchain, and artificial intelligence (AI), the metaverse is ready to change not only digital interaction but also the ownership and value transfer.[2] While distributed platforms like *Decentraland* and *The Sandbox* have brought blockchain-based methods to exchange virtual goods, leading technology companies, including *Meta, Microsoft, and Apple,* have heavily invested in metaverse infrastructure.[3] Intellectual property (IP) protection becomes even more important as digital avatars negotiate virtual real estate, wearable NFTs, and AI-generated art. Currently controlled more by code and private platform policies than by law, the metaverse poses significant questions to conventional IP models based on territoriality, physicality, and legal authoring.[4]

The legal uncertainty around the ownership, protection, and execution of intellectual property rights defines a major metaverse challenge. Conventions of copyright, trademark, and patent law fight to fit non-physical, interoperable, and AI-generated information.[5] For example, copyright law is based on clearly recognizable authorship and fixation, both of which are elusive in a distributed, user-generated, dynamic context.[6] Trademark law also finds itself in unknown territory as brand use in virtual environments sometimes blurs the line between parody, fair use, and infringement.[7] Furthermore, complicating the implementation of IP rights in the metaverse are *jurisdictional questions* and the *sometimes anonymous character of virtual transactions*.[8] While technological innovations like *smart contracts* and *NFTs* provide means for claiming ownership, they lack the normative and

[2] Matthew Ball, *The Metaverse: And How It Will Revolutionize Everything* (Liveright Publishing 2022).
[3] Joshua Fairfield, *Owned: Property, Privacy, and the New Digital Serfdom* (Cambridge University Press 2017).
[4] Lawrence Lessig, *Code: And Other Laws of Cyberspace* (Basic Books 1999).
[5] Graeme B Dinwoodie and Rochelle C Dreyfuss, *A Neofederalist Vision of TRIPS: The Resilience of the International Intellectual Property Regime* (Oxford University Press 2012).
[6] Lionel Bently & Brad Sherman, *Intellectual Property Law* 50 (5th ed. OUP 2022).
[7] Lisa Ramsey, Brandjacking in the Metaverse, 18(1) JIPITEC 22 (2023).
[8] Andres Guadamuz, Intellectual Property in the Metaverse: Some Reflections, 14(2) J.L. TECH. & TRUST 117 (2022).

legal support of legislative frameworks, therefore casting doubts on their enforceability and legitimacy.[9]

This paper aims to close the normative and pragmatic voids in current IP systems as applied to the metaverse. Its main goal is to investigate how current legal rules from conventional IP law, as well as new digital frameworks, may be used to produce a coherent, hybrid model of IP governance fit for immersive, distributed settings. This research covers theological, comparative, and technological aspects in addition. It first looks at how far conventional IP rules might be stretched or reinterpreted to handle issues particular to the metaverse. Second, it learns from digital IP systems, including *smart licensing systems*, *blockchain provenance, and digital rights management (DRM)*. At last, it looks at the possibilities of creating a hybrid governance structure including national authorities, international agencies like WIPO, virtual platforms, creators, and distributed autonomous organizations (DAOs).[10]

In this framework, the paper answers the following research questions:

1. In metaverse situations, to what degree can conventional IP regimes offer legal clarity and protection?
2. For IP administration in the metaverse, what possibilities and difficulties present themselves from newly developed technologies as smart contracts, blockchain, and NFT?
3. How may digital IP systems be used with legal doctrines to provide an efficient, adaptable, inclusive governance structure for IP conflicts connected to the metaverse?
4. How might global institutions, platforms, and code-based systems help to create and enforce metaverse IP norms?

The paper is organized mostly as follows. Section 4 offers a thorough evaluation of conventional and digital IP models together, pointing up the gaps in the body of current metaverse governance research. Section 5 details the doctrinal and comparative legal approach taken for the investigation. Key IP concerns in the metaverse—including authorship, infringement, and territorial enforcement—are discussed in Section 6. Section 7 evaluates the merits and drawbacks of both conventional and digital intellectual property systems by learning from both. Section 8 suggests a hybrid IP governance paradigm combining technology tools with legal standards. Section 10 offers

[9] Primavera De Filippi and Aaron Wright, *Blockchain and the Law: The Rule of Code* (Harvard University Press 2018).

[10] WIPO, 'WIPO Conversation on IP and Frontier Technologies' (2023) https://www.wipo.int/meetings/en/topic.jsp?group_id=754 (last visited May 12, 2025).

focused policy recommendations for legislators, technologists, and authorities; Section 9 finishes the study with a summary of results.

By providing both a critical study and a practical road forward for IP regulation in virtual worlds, this structure seeks to add to the growing conversation on metaverse law.

2. LITERATURE REVIEW

2.1 TRADITIONAL IP REGIMES

Originally meant to control physical breakthroughs and expressions, traditional IP regimes, which comprised copyright, trademark, and patent laws, were mostly based on jurisdiction; these laws depend on a centralized system of registration and enforcement.

Grounded in systems like the "*Berne Convention"* and "*the Indian Copyright Act, 1957*", copyright law protects original literary, artistic, musical, and dramatic works upon fixation.[11] But in the digital era, the simplicity of dissemination and replication has seriously threatened the enforceability and economic sense of copyright.[12]

Slogans, names, and logos, all brand identifiers, are covered by trademark law. Exclusive rights to use such marks in trade are granted by the *Lanham Act* in the United States and the Trademarks Act, 1999, in India.[13] But the rise of worldwide digital platforms and domain names raises issues concerning territoriality, dilution, and cross-border infringement.[14]

Patent law protects newly created industrial designs and ideas. Though software and algorithms, essential for digital innovation, often find themselves in a legal grey area, international accords like TRIPS try to harmonize standards.[15] In an algorithm-driven economy, traditional patent systems find it difficult to match changing concepts of "invention" and "non-observability".

These old systems are unfit to manage the distributed and intangible character of digital IP since their foundation is centralized enforcement and physical asset control.

[11] Copyright Act, No. 14 of 1957, INDIA CODE (1957).
[12] Paul Goldstein, *Copyright's Highway: From Gutenberg to the Celestial Jukebox* 89–92 (2003).
[13] Trade Marks Act, No. 47 of 1999, INDIA CODE (1999); Lanham Act, 15 U.S.C. §§ 1051–1141n (2021).
[14] Jane C. Ginsburg, The Concept of "Authorship" in Comparative Copyright Law, 52 DEPAUL L. REV. 1063, 1070–71 (2003).
[15] Lionel Bently & Brad Sherman, *Intellectual Property Law* 445–49 (5th ed. 2018).

2.2 DIGITAL IP MECHANISMS

Blockchain, non-fungible tokens (NFTs), smart contracts, and DRM tools have reshaped IP creation, management, and enforcement. Often functioning independently and worldwide, these systems challenge accepted legal doctrines.

Blockchain technology lets distributed, unchangeable records exist. In the IP context, it can be used to confirm authorship, timestamp creative works, and build licensing chains.[16] Blockchain presents evidence of existence, but it cannot enforce legal rights, therefore separating technology validation from legal acceptance.[17]

NFTs are blockchain-based tokens that stand for original digital objects. They give digital art, music, or literature a means of attribution. But unless stated clearly, buying an NFT usually results in uncertainty and conflicts since it hardly reflects genuine copyright.[18] This discrepancy between legal rights and technical "ownership" emphasizes the necessity of better guidelines.

Digital agreements coded on a blockchain that self-execute are smart contracts. These, by including terms straight into the digital content, could transform IP licensing.[19] Still, many countries have unresolved legal enforceability questions about intent, capacity, and statutory recognition.

Commonly used by digital platforms, DRM techniques use access restrictions and encryption to stop illegal copying or distribution. Critics contend that DRM locks users into proprietary environments and often overreaches, therefore compromising fair use.[20] Although good for content control, DRM raises moral and legal issues about consumer rights.

2.3 SCHOLARLY GAPS AND THEORETICAL SHORTCOMINGS

There are still major scholarly and practical gaps, even if the literature on digital IP is expanding. First of all, a key obstacle is jurisdictional uncertainty. While digital assets are worldwide accessible and sold, traditional IP rights are geographically specific. Especially in distributed settings, it is unclear which court has jurisdiction over NFT conflicts or smart contract breaches.[21] While some

[16] Primavera De Filippi & Aaron Wright, *Blockchain and the Law: The Rule of Code* 14–20 (2018).
[17] Primavera De Filippi & Samer Hassan, Blockchain Technology as a Regulatory Technology: From Code is Law to Law is Code, 1 FIRST MONDAY (2016), https://firstmonday.org/ojs/index.php/fm/article/view/7113 (last visited May 2025).
[18] Aaron Wright & Primavera De Filippi, Decentralized Blockchain Technology and the Rise of Lex Cryptographia, 1–3 (2015), https://ssrn.com/abstract=2580664 (last visited May 2025).
[19] Max Raskin, The Law and Legality of Smart Contracts, 1 GEO. L. TECH. REV. 305, 310–12 (2017).
[20] Pamela Samuelson, DRM {and, or, vs.} the Law, 46 COMM. ACM 41, 42–45 (2003).
[21] Michael Geist, Is There a There There? Toward Greater Certainty for Internet Jurisdiction, 16 BERKELEY TECH. L.J. 1345 (2001).

advocate unified global norms, no successful multilateral agreement tackles blockchain-based intellectual property.

Second, distributed governance presents fresh difficulties. Blockchain systems such as Ethereum or Solana lack central managers, so it is challenging to prosecute IP infringement. Although academics like *De Filippi* support *decentralized autonomous organizations* (DAUs) as a regulatory substitute, such institutions can lack legal status and legitimacy.

Third, IP enforcement is heavily influenced by private digital platforms, which have an exaggerated importance. Using opaque takedown systems and algorithmic filters, companies as *Google, Amazon, and Meta* control content.[22] This begs questions about due process, prejudice, and the rising outsourcing of legal duties.

At last, modern research sometimes uses a techno-utopian perspective, presuming that technology itself can replace legislation. Still, problems with equity, access, and enforceability abound, particularly in underdeveloped countries. Still rare is empirical research on how Global South innovators interact with digital intellectual property tools.

In essence, the literature demonstrates flaws in legal theory, enforcement clarity, and policy design, even when digital IP systems bring fresh efficiency. A comparative, empirical, and critical study is desperately needed to close the distance between technical innovation and legal infrastructure.

3. METHODOLOGY

Using a doctrinal legal approach, this study looks at how intellectual property rights are changing in the digital age. Focusing on how conventional IP ideas relate to new technologies like NFTs and blockchain, it methodically explores main sources including statutes, court decisions, international treaties, and regulatory rules.

Legal frameworks in the *United States, European Union, and India* are compared in order to evaluate their reactions to *digital ownership, smart contracts, and platform governance*. Case studies of virtual platforms like *Decentraland and Meta* (previously Facebook) are also done to help understand how IP is operationalized in metaverse settings.

Finally, the paper offers a techno-legal assessment of blockchain-based smart contract tools, analysing their design, possibilities for implementation, and constraints in replacing conventional

[22] Anupam Chander, How Law Made Silicon Valley, 63 EMORY L.J. 639, 665–67 (2014).

licensing or intellectual property enforcement systems. This multifarious approach offers a strong legal and technological prism for examining the digital IP environment.

4. IP CHALLENGES IN THE METAVERSE: CORE LEGAL ISSUES

Considered as a persistent, immersive, and distributed digital realm, the metaverse poses hitherto unheard-of legal questions for intellectual property (IP) systems. Traditional IP regimes are based on ideas formed by the physical world: clear ownership, tangible authorship, jurisdictional borders, and enforceable standards. But in the metaverse, these presumptions are thrown off. Users produce, distribute, remix, and transact in ways that question accepted legal interpretations of originality, infringement, and legal responsibility. With a especially focus on AI-generated works, user-generated content (UGC), decentralized platforms, and real-time digital interactions, this part addresses three major IP challenges inside the metaverse: *authorship and ownership, infringement and enforcement*, *and jurisdictional and cross-border* legal gaps.

4.1 OWNERSHIP AND AUTHORSHIP ISSUES

Concerning original and derivative works as well as creators and consumers, traditional IP law assumes a dichotomy. By combining human creativity with artificial intelligence technologies and by allowing massive, group user involvement, the metaverse questions these presumptions.

AI-GENERATED CONTENT AND THE DILEMMA OF LEGAL AUTHORSHIP

Finding the authorship of AI-assisted content presents a major difficulty. Users of virtual reality platforms as *Meta's Horizon Worlds and Decentraland* can utilize generative AI technologies to create avatars, digital architecture, and creative works. Under conventional copyright rules, especially those based on the need for human authorship, such AI-assisted creations might be outside the legal protective reach. For instance, the US Copyright Office has regularly rejected protection to works created by artificial intelligence, missing human creative input.[23] Under the *Copyright, Designs and Patents Act 1988*, the United Kingdom allows restricted protection for computer-generated works, therefore attributing authorship to the person who makes the required preparations for creation.[24]

[23] US Copyright Office, *Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence* (March 2023) https://www.copyright.gov/ai (last visited May 13, 2025).
[24] Copyright, Designs and Patents Act 1988, s 9(3) (UK).

These criteria, however, are progressively more insufficient. Can a person be regarded as the author if they just change the input values while an artificial intelligence system creates the creative output? Should authorship or ownership follow the platform or the AI developer? These unresolved issues call for legal inventiveness to fit artificial intelligence-human co-creativity in immersive digital environments.

USER-GENERATED CONTENT AND PLATFORM-BASED OWNERSHIP

Value in the metaverse is mostly driven by user-generated content. Users do not usually, however, have control over the platforms that feature their works. For most major platforms, *Standard Terms of Service* (ToS) give the platform provider broad licenses to use, alter, or commercialize user-generated material.[25] This legal mismatch produces a contradiction whereby users devote significant creative energy while the legal gains go disproportionately to platform providers.

Cooperation in creating adds another level of complexity. Joint authorship theories become difficult when several people contribute to a single product, say an interactive narrative or virtual landscape. Legal rules now in use demand shared purpose and indivisible contributions, which are challenging to prove in the spontaneous, fractured, and sometimes pseudonymous partnerships typical of virtual contexts.[26]

4.2 INFRINGEMENT AND ENFORCEMENT

The metaverse's real-time, anonymous, decentralised character seriously reduces the effectiveness of traditional IP enforcement mechanisms. Mass violations in ephemeral forms, across borders, and in both ephemeral and permanent forms all complicate detection, identification, and redress.

AVATAR-DRIVEN COMMERCE AND TRADEMARK EROSION

Virtual avatars are shopping more and more for digital items such as branded settings, accessories, or virtual clothes. Often without permission, this trade regularly copies or replays actual trademarks. Already in the metaverse, virtual duplicates of expensive goods, *Nike sneakers or Gucci handbags*, are causing major questions about trademark dilution, passing off, and counterfeiting.[27]

Still, enforcement stays elusive. While certain platforms might be decentralised or run by DAOs, therefore restricting opportunities for recourse, others might lack sufficient monitoring systems.

[25] Meta, 'Terms of Service' (Meta Platforms, Inc, 2023) https://www.meta.com/legal/terms (last visited May 13, 2025).
[26] Irene Calboli & Edward Lee, Trademark Licensing in the Metaverse, 112 TMR 1099 (2022).
[27] Hermès Int'l v. Rothschild, No. 22-CV-384 (JSR), (S.D.N.Y. Feb. 8, 2023).

Moreover, it is debatable whether, under national trademark regulations, virtual trademark use qualifies as "use in commerce". While US law has acknowledged some online usage as commercial, it is still unclear whether NFTs and digital commodities satisfy the Lanham Act's definition of "goods in commerce".[28]

COPYRIGHT INFRINGEMENT IN REAL-TIME AND EPHEMERAL SPACES

Real-time design of the metaverse lets users stream, remix, or show copyrighted material like music or movie snippets during live events or social gatherings, therefore encouraging spontaneous copyright infringement. Although these events are fleeting, under copyright law, they could be public performances or unapproved replicas.[29]

The fleeting and participatory character of the illegal act complicates enforcement in such circumstances. Though blockchain-based monitoring tools and DRM systems present possible answers, they have technological, legal, and ethical constraints, including conflicts with ideas like fair use and digital rights to expression.[30] Moreover, pseudonymity makes it more difficult to find and punish infringers, especially on distributed systems.

4.3 JURISDICTIONAL AND ENFORCEMENT GAPS

The design of the metaverse spans geographical limits, therefore negating conventional jurisdictional concepts. Legal uncertainties and uneven enforcement follow from users, platforms, and servers distributed across national boundaries.

Legal Fragmentation and Conflict of Laws

IP enforcement is still mostly territorial, even if international conventions like the Berne Convention and the TRIPS Agreement exist. There isn't any global organization now handling metaverse-specific IP concerns. Forum shopping and jurisdictional overlaps are thus rather widespread. For example, a digital artwork created by a French user uploaded in India onto a US-based platform can interact with several contradicting legal systems.[31]

[28] Lanham Act 1946, s 45 (15 USC § 1127).
[29] Jane C. Ginsburg, The Concept of the "Author" in Comparative Copyright Law, 52 DEPAUL L. REV. 1063 (2003).
[30] Jennifer Urban, Joe Karaganis & Brianna Schofield, Notice and Takedown in Everyday Practice, 64 UCLA L. REV. 1024 (2017).
[31] Berne Convention for the Protection of Literary and Artistic Works, Sept. 9, 1886, last revised July 24, 1971, 828 U.N.T.S. 221.

Initiatives for regional harmonisation, like the Digital Single Market of the European Union, offer a half answer.[32] But the metaverse's borderless character calls for more global cooperation and maybe the creation of new international rules fit for digital and immersive settings.

DECENTRALIZATION, DAOS, AND PLATFORM IMMUNITY

Decentralised technologies such as blockchain, smart contracts, and DAOs abound in emerging metaverse platforms. These systems divide responsibility across users, therefore reducing the liability of any one entity. Governance is carried out via community voting on sites such as The Sandbox or Decentraland, therefore lowering centralized control and confusing responsibility.[33]

Furthermore, insulating platform operators from responsibility for user-generated content is our statutory immunity like *Section 230 of the US Communications Decency Act*. Courts nonetheless provide a major obstacle to enforcement, even if they have lately limited the extent of such rights in commercial settings.[34]

For IP liability, smart contracts and DAOs create issues. Many times, these systems run free from a clearly defined legal entity and on their own. Conventional theories of direct, contributory, or vicarious culpability are therefore difficult to apply and call for fresh legal constructions to handle distributed agency and decentralized players.[35]

PROCEDURAL AND TECHNICAL ENFORCEMENT BARRIERS

Enforcing court remedies across borders in pseudonymous, dispersed ecosystems remains challenging even when they are secured. Though sometimes useful in criminal cases, *Mutual Legal Assistance Treaties (MLATs)* are usually too sluggish and limited for intellectual property conflicts. Civil enforcement relies on national acceptance of international rulings, which sometimes calls for certain treaties or supporting laws.[36]

Scholars and legislators have put up creative ideas to remove these obstacles. These include the creation of virtual IP courts or metaverse-specific arbitral venues equipped to manage conflicts in a technologically sensitive and cross-jurisdictional way.[37] Technical fixes such as digital

[32] European Commission, *A Digital Single Market Strategy for Europe* COM(2015) 192 final.
[33] Primavera De Filippi & Aaron Wright, *Blockchain and the Law: The Rule of Code* 178–81 (Harvard Univ. Press 2018).
[34] Communications Decency Act 1996, s 230 (47 USC § 230); see also *Gonzalez v Google LLC* 598 US 617 (2023).
[35] Carla L. Reyes, DAO Operating Systems: From Jurisdiction to Legal Personality, 68 VILL. L. REV. 365 (2023).
[36] Hague Conf. on Private Int'l Law, *Convention on the Recognition and Enforcement of Foreign Judgments in Civil or Commercial Matters* (July 2, 2019).
[37] David G. Post, The Case for a Virtual Arbitration System, 27 J. INT'L ARB. 139 (2010).

watermarking, blockchain-based IP registries, and AI-driven monitoring systems could also offer extra enforcement tools.[38]

With dynamic authorship, real-time interactivity, and jurisdictional fragmentation, the metaverse presents a fundamentally new setting for IP law. Rooted in static, territorial, and human-centric concepts, current legal systems are ever more insufficient. Reacting properly to these difficulties calls for both institutional transformation as well as doctrinal creativity. Working together, legislators, courts, and international agencies may redefine authorship, improve enforcement systems, and create harmonised laws reflecting the multifaceted and borderless character of the metaverse.

5. LESSONS FROM TRADITIONAL AND DIGITAL IP REGIMES

5.1 DOCTRINAL DURABILITY: ORIGINALITY, DISTINCTIVENESS, AND FAIR USE

Anchored on basic ideas that have shown startling longevity even in the face of extreme technical development, traditional IP systems reflect three such ideas: ***originality, distinctiveness, and fair use***, which remain conceptually valid even if their actual implementation sometimes suffers in the immersive and distributed architecture of the metaverse.

ORIGINALITY IN THE GENERATIVE AI ERA

Copyright rules have long been based on the originality principle, which also acts as the limit for creativity and the protection threshold. Originality under common law systems, like the United Kingdom, calls for the application of "skill, judgment, and labour".[39] Provided the author makes an intellectual addition, this criterion allows works derived from current material.

But artificial intelligence-assisted creativity is making originality more difficult. Avatars can use generative AI techniques in metaverse settings to create art, music, architecture, or stories. When such output lacks notable human involvement, the usual originality barrier becomes difficult to define. Generally speaking, courts have turned down granting copyright to works created entirely by machines.[40] Still, a new hybrid standard of *"human-mediated originality"* could be required where

[38] Morten Hviid, Sabine Jacques & Rebecca Moosavian, Blockchain and Intellectual Property, in *Research Handbook on Intellectual Property and Digital Technologies* 101 (Tanya Aplin ed., Edward Elgar 2020).
[39] *University of London Press Ltd v University Tutorial Press Ltd* [1916] 2 Ch 601 (Ch).
[40] US Copyright Office, *Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence* (March 2023) https://www.copyright.gov/ai (last visited May 14, 2025).

humans direct AI systems with prompts or parameters. This would reconcile the user's conceptual input with the machine's computational function, therefore reflecting changing standards in digital authorship.[41]

DISTINCTIVENESS AND VIRTUAL BRAND IDENTITY

In trademark law, distinctiveness is the yardstick for registrability and enforcement. Marks must be able to set one entity's goods or services apart from another's.[42] From tangible products to e-commerce sites, this idea has evolved over decades of business.

The metaverse experiments with this idea in two main respects. It first blurs the line separating actual and virtual goods. Especially in photorealistic settings, virtual goods—such as digital sneakers or branded skins—often seem exactly like their real-world equivalents. Second, user-generated spaces raise issues about source confusion, dilution, and non-nominative fair use by copying or parodying actual trademarks.[43]

Notwithstanding these difficulties, uniqueness is nevertheless a useful theological tool. Courts have come to see that, should consumers link the mark with a particular source, trademarks can reach virtual goods, therefore fulfilling the criteria for secondary meaning.[44]

FAIR USE AS A FLEXIBLE DEFENCE

Fair use and its equivalents, such as "fair dealing" in the UK and India, offer essential space for parody, teaching, criticism, and invention. These ideas are naturally adaptable, allowing courts to weigh rights against interests depending on the situation.

Fair usage has evolved into a main battlefield in digital environments. Often remixing, repurposing, or transforming material in ways that challenge legislative exemption, metaverse users also This method is under pressure in immersive environments because interactivity blurs the line between expression and exploitation, even while US courts have adopted a transforming use test, emphasizing whether a new work adds something fresh or of further purpose.[45] Still, fair use remains a doctrinal safety valve that allows innovation free from strict licensing restrictions.

[41] Ryan Abbott, *The Reasonable Robot: Artificial Intelligence and the Law* 103–05 (Cambridge Univ. Press 2020).
[42] Trade Marks Act 1994, s 3(1)(b) (UK); see also Indian Trade Marks Act 1999, s 9(1)(a).
[43] Mark A. Lemley & Eugene Volokh, Law, Virtual Reality, and Augmented Reality, 166 U. PA. L. REV. 1051 (2018).
[44] Hermès Int'l v. Rothschild, No. 22-CV-384 (JSR), (S.D.N.Y. Feb. 8, 2023).
[45] Campbell v. Acuff-Rose Music, Inc., 510 U.S. 569 (1994).

6.2. BREAKDOWNS AND INFLEXIBILITIES: DOCTRINAL LIMITS IN DIGITAL ENVIRONMENTS

Though important IP principles have conceptual longevity, their actual application has exposed serious flaws. Under the technical and spatial framework of the metaverse, two especially troublesome areas are takedown systems and territorial enforcement policies.

INEFFICIENCIES OF TAKEDOWN MECHANISMS

To handle online infringement, *the Digital Millennium Copyright Act* (DMCA) and related legislation worldwide have established *notice-and-takedown* systems.[46] These systems are not fit for the dynamic and distributed character of the metaverse, even if they offer a disciplined way for rights holders to ask that offending content be removed.[47]

First, takedowns are reactive, so the rights holder must keep a close eye on large digital areas and provide particular notifications for every violation. In the metaverse, where millions of people engage concurrently, such monitoring is essentially impossible. Second, these ideas assume centralization of platforms. Decentralised systems running smart contracts or peer-to-peer protocols lack clear middlemen capable of following takedown demands.[48] Third, takedowns often overlook derivative or reposted material, leading to the "whack-a-mole" issue whereby illegal material resurfaces across different servers or user accounts.

TERRITORIALITY AND THE FRAGMENTATION OF ENFORCEMENT

Originating from national laws enforced by domestic courts, IP rights are fundamentally territorial. Although international treaties like the Berne Convention harmonize baseline requirements, they do not help to settle conflicts of law or provide easy cross-border enforcement.[49]

The territorial model falls apart in the *metaverse* when servers, consumers, and creators are scattered all around. An unlawful virtual performance of copyrighted music held on a platform with servers in Switzerland, developers in the US, and consumers in India, for instance, could include many

[46] Digital Millennium Copyright Act 1998, 17 USC § 512.
[47] Primavera De Filippi & Aaron Wright, *Blockchain and the Law: The Rule of Code* 173–77 (Harvard Univ. Press 2018).
[48] Daphne Keller, 'Empirical Evidence of "Whac-A-Mole" Takedowns on Content Platforms' (2022) Stanford Cyber Policy Center.
[49] Berne Convention for the Protection of Literary and Artistic Works (1886, revised 1971) 828 UNTS 221.

legal systems, each with different rules, procedures, and remedies. Underreach or jurisdictional excess follows naturally.[50]

Courts have tried to impose jurisdiction using the effects doctrine or targeting criteria; however, these instruments provide little clarity when addressing pseudonymous actors or decentralised autonomous organizations (DAOs) that reject geographical pinning.[51] Rights holders thus suffer jurisdictional fragmentation and enforcement paralysis.

6.3 ADAPTIVE TOOLS FROM DIGITAL SYSTEMS: TOWARD A METAVERSE-RESPONSIVE IP FRAMEWORK

Understanding the limits of legacy systems, digital platforms, and blockchain technology, new approaches to IP attribution, enforcement, and governance have started to be tested. Though not without difficulties, these tools provide interesting directions for a metaverse-responsive IP infrastructure.

SMART CONTRACTS AND AUTOMATED LICENSE APPROVAL

Self-executing agreements contained on blockchain networks are smart contracts. Within IP, they can incorporate usage restrictions, payment conditions, and revocation clauses into code to automatically license content.[52] A digital artist in the metaverse might, for example, license 3D artwork for in-world exhibition using a smart contract that automatically enforces payment and forbids resale or duplication.

Smart contracts appeal for their efficiency and autonomy. By means of codes, they guarantee compliance, cut middlemen, and lower transaction costs. Legal enforceability is still a question, though; smart contracts might not have subtlety, flexibility, or redress systems in times of uncertainty or mistake.[53]

BLOCKCHAIN IDENTITY AND UNCHANGEABLE VERACITY

Blockchain also makes provenance tracking and immutable attribution possible. Digital material registered on a blockchain ledger allows creators to establish authorship, timestamp creation, and

[50] Graeme B. Dinwoodie, Territoriality of Trade Marks in a Post-National Era, 40 IIC 1065 (2009).
[51] Carla L. Reyes, Blockchain-Based Decentralized Autonomous Organizations and the "New Entity" Question, 59 AM. BUS. L.J. 85 (2019).
[52] Joshua Fairfield, Smart Contracts, Bitcoin Bots, and Consumer Protection, 71 WASH. & LEE L. REV. 35 (2014).
[53] Kevin Werbach & Nicolas Cornell, Contracts Ex Machina, 67 DUKE L.J. 313 (2017).

track further uses or transfers. In NFT-based content distribution, where tokenization results in scarcity and traceability, this is very valuable.[54]

Although blockchain cannot stop infringement overall, it supports clear evidentiary claims in conflicts. Particularly in cases when timestamped data match other supporting documentation, courts have progressively approved blockchain recordings as admissible proof of authorship or ownership.[55] To be really successful, though, these technologies must be more fully integrated with registries, legal databases, and enforcement agencies.

DAOS AND COLLECTIVE GOVERNANCE OF IP

For managing shared IP rights in virtual communities, DAOs and Collective Governance of IP provide a fresh governance framework. Contributors to a metaverse gaming world might pool their assets under a DAO, voting on how those assets are licensed, sold, or remixed.[56] This concept offers democratic decision-making over common creative resources and fits the cooperative ethos of the metaverse.

Still, DAOs create legal puzzles. Most governments do not acknowledge DAOs as legal bodies, therefore complicating issues of liability, representation, and contractual standing.[57] Furthermore vulnerable to token-weighted vote disparities is DAO governance, which might either mimic or worsen platform-level power inequalities.

MICROTRANSACTIONS AND TOKENIZED LICENSING

Tokenised licensing uses fungible or NFTs to fractionally license IP assets, including virtual products, songs, or artworks. [58] This lets artists profit from material via token mechanics' embedded microtransactions or royalty-sharing schemes.

With inbuilt royalties that pay co-creators and remixers each time the song is performed in-world, such systems could let a metaverse musician publish a song as an NFT.[59] Tokenized systems, however, depend on regulatory certainty about consumer protection, data privacy, and securities law.

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[54] WIPO, *Blockchain and IP Law* (2020), https://www.wipo.int/publications (last visited May 14, 2025).
[55] European Union Blockchain Observatory, *Legal Recognition of Blockchain Evidence* (2021).
[56] Primavera De Filippi, Decentralized Autonomous Organizations: Beyond the Hype, 3 L. & ETHICS HUM. RTS. 5 (2020)
[57] Carla L. Reyes, If Rockefeller Were a Coder, 87 GEO. WASH. L. REV. 373 (2019).
[58] Aaron Wright & Primavera De Filippi, Decentralized Blockchain Technology and the Rise of Lex Cryptographia (2015), https://papers.ssrn.com/abstract=2580664 (last visited May 14, 2025).
[59] Shermin Voshmgir, *Token Economy: How Blockchain and Smart Contracts Revolutionize the Economy* 212–19 (BlockchainHub Berlin 2020).

7. PROPOSAL: A HYBRID IP GOVERNANCE FRAMEWORK FOR THE METAVERSE

Existing legal systems expose both doctrinal limits and regulatory fragmentation as intellectual property (IP) moves into the immersive digital sphere of the metaverse. Comprising interoperable virtual worlds, distributed platforms, and user-generated economies, the metaverse calls for a governance model that combines conventional IP values with technical design concepts. This segment suggests a hybrid model that fits law with code, rights with creativity, and territoriality with global involvement.

7.1 CORE PRINCIPLES

Four fundamental ideas would define the suggested hybrid governance structure for metaverse IP: interoperability, transparency, user involvement, and platform neutrality.

Interoperability guarantees that digital rights and virtual objects are not trapped in segregated systems. Digital assets, including skins, NFTs, and avatars, typically lack cross-platform mobility in a metaverse, including platforms like Decentraland, The Sandbox, or Meta's Horizon Worlds, which results in "walled gardens" of intellectual property. Standardizing digital rights and metadata tagging would help to enable smooth IP rights recognition and transfer across several virtual environments.[60]

Whether it's a 3D creation, virtual artwork, or code-based solution, transparency is really essential to guarantee users grasp how their IP is managed. Open-source verification systems, publicly available smart contracts, and transparent licensing terms serve to guarantee that inventors retain control and attribution, therefore preserving the objectives of intellectual property law in supporting innovation.[61]

Through involving creators, developers, and consumers in IP-related decision-making, user involvement fosters democratic governance. While in the metaverse, distributed governance systems such as DAOs offer inclusive models for policy formulation and execution, traditional IP rules sometimes marginalize end users and small-scale creators.[62]

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[60] Primavera De Filippi & Aaron Wright, *Blockchain and the Law: The Rule of Code* 165–69 (Harvard Univ. Press 2018).

[61] Annemarie Bridy, Copyright's Digital Deputies: DMCA-Plus Enforcement by Internet Intermediaries, 49(1) SANTA CLARA L. REV. 32 (2010).

[62] DAO Research Collective, *The Emerging Role of DAOs in Web3 Governance* (2023), https://daocollective.org/report2023 (last visited May 10, 2025).

Platform neutrality prevents the favouring of one metaverse economic dominant player. Platform neutrality in IP governance would forbid platforms from using algorithmic bias or restricting terms of service to privilege their content or to suppress independent creators, same as net neutrality in internet regulation would forbid platforms from using algorithmic bias or restrictive terms of service to privilege their content or to repress independent creators.[63] This idea also conforms with the goals of competition law, which seek to stop the misuse of dominance in digital marketplaces.

7.2 LEGAL–TECHNOLOGICAL SYNERGY

Beyond legal theory, a successful framework for metaverse IP administration must include code layer integration of recognition mechanisms. As Lawrence Lessig famously observed, in digital contexts, "Code is law".[64] Given this, incorporating IP logic into the metaverse's architecture is not just wise but also absolutely required.

Three main technologies show promise: blockchain tagging, digital watermarks, and metadata.

Digital watermarks incorporate recognizable information, such as photos, 3D objects, or music, within digital files without changing their usability. These watermarks support automatic attribution systems, track derivative usage, and follow authorship.[65] For example, an integrated watermark can identify the artist even if the object is altered or transferred when an artist posts a virtual sculpture into a metaverse platform.

Structured information describing data metadata may include jurisdictional markers, licensing terms, and copyright status. Such metadata could be used by smart systems to enforce usage limits, auto-detect violations, or enable automated royalties.[66]

Blockchain tagging brings provenance and immutability into the IP life cycle. Tokenizing IP, that is, through NFTs, ensures traceable transaction history, timestamped origin, and verified ownership. For NFTs, the ERC-721 or ERC-1155 criteria, for instance, let authors keep control over royalties and secondary sales, thereby improving IP monetizing ability.[67]

Smart contracts can also automate enforcement. A smart contract can stop a digital artwork from loading on commercial platforms if it is licensed for display only in educational virtual

[63] Dina Srinivasan, The Antitrust Case Against Facebook, 16(2) BERKELEY BUS. L.J. 39 (2020).
[64] Lawrence Lessig, *Code and Other Laws of Cyberspace* 6 (Basic Books 1999).
[65] Agnieszka McPeak, Disruptive Digital Watermarks: Copyright Enforcement in the Age of NFTs, 74 STAN. L. REV. ONLINE 54 (2022).
[66] Jane C. Ginsburg, The Concept of Originality in Copyright Law, 52 U. PITT. L. REV. 106 (1990).
[67] Ethereum Foundation, *ERC-721: Non-Fungible Token Standard* (2018), https://eips.ethereum.org/EIPS/eip-721 (last visited May 10, 2025).

environments. These elements produce "compliance by design" by fusing legal standards directly into platform architecture.

7.3 ROLE OF STAKEHOLDERS

An efficient hybrid IP governance strategy has to balance the roles of conventional and emerging stakeholders:

To reflect virtual and tokenized creations, national authorities, such as the US Copyright Office or the Indian IP Office, must upgrade IP registration and recognition tools. Enabling NFT-based evidence of ownership or blockchain-authenticated copyright filings, for example, would strengthen metaverse contexts' enforcement.[68]

Standard-setting should be led by WIPO, as it did with the UDRP. Resolving cross-jurisdictional conflicts and harmonizing rules for digital ownership, licensing, and fair use calls for a worldwide framework.[69]

Platform owners have to include dispute reporting mechanisms and rights management tools. They can adopt interoperable licensing layers, including new licences specifically for virtual and token-based environments from Creative Commons.

From digital artists to virtual architects, creators of all kinds have to be enabled by easily available legal-tech tools and instructional programs. Many metaverse users in tokenized environments11 are ignorant of their rights or how to enforce them.[70]

DAOs mark a fundamental change in governance. These user-led organizations can enable distributed rights enforcement, policy voting, and group ownership. For a virtual museum run by a DAO, for example, community consensus might help to decide IP licensing terms for digital art exhibits.

At last, soft law organizations like *ICANN, IEEE, or Creative Commons* can be rather important in developing non-binding rules and interoperability guidelines. Their voluntary but generally accepted systems help to address regulatory voids and preserve stakeholder confidence.[71]

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[68] WIPO, *WIPO Technology Trends 2022: NFTs and the Metaverse* (2022), https://www.wipo.int/publications/en/details.jsp?id=4591 (last visited May 10, 2025).
[69] Emily Sharpe & Andres Guadamuz, IP in the Metaverse: An Educator's Guide, 45 EIPR 299 (2023).
[70] Creative Commons, *CC Licenses for Virtual Worlds: A Proposal* (2024), https://creativecommons.org/metaverse (last visited May 10, 2025).
[71] Ethan Katsh and Orna Rabinovich-Einy, *Digital Justice: Technology and the Internet of Disputes* (Oxford University Press 2017).

7.4. DISPUTE RESOLUTION MECHANISMS

Traditional litigation is sometimes too slow, costly, and jurisdictionally vague, given the speed and complexity of metaverse interactions. This calls for creative methods of conflict settlement, such as DAO-led adjudication and Online conflict settlement (ODR).

Fast-track solutions for resolving IP problems in the metaverse can come from ODM systems, as developed by sites like eBay and UDRP. For copyright infringement, licensing breach, or identity theft conflicts, especially automated negotiation tools, digital evidence management, and asynchronous arbitration.[72]

Adjudication under DAO-led community-based enforcement and dispute resolution, Aragon Court and Kleros, for instance, cast token-based juries to decide on smart contract-related conflicts. Although state law does not currently constrain these methods, they offer scalable, trust-based substitutes for addressing content removal policies or creator ownership disputes.

Establishing a WIPO-style tribunal for metaverse-related IP conflicts seems like a bright future road forward. This type of physique could:

a) Keep a panel of professionals covering IP, digital media, and blockchain;
b) Acknowledge both conventional and tokenized IP evidence.
c) Issue judgments enforced on compliant platforms by smart contracts on compatible systems;
d) Using soft law tools and platform incentives, promote adherence.

At first, this tribunal may run under a multistakeholder compact including WIPO, main metaverse platforms, and country intellectual property offices. Through platform terms of service, its choices may have persuasive authority or even acquire de facto enforceability over time.

8. POLICY RECOMMENDATIONS

Current IP systems have to be rebuilt to meet the fresh difficulties as the metaverse develops into a major centre of economic, social, and creative activity. A forward-looking policy agenda should be based on institutional adaptability, technical foresight, and international harmonization mixed together. Through multi-stakeholder cooperation and regulatory innovation, the following suggestions try to fill in the gaps in metaverse governance.

[72] Kleros, *Decentralized Justice: Resolving Disputes in the Web3 Era* (2022), https://kleros.io (last visited May 10, 2025).

1. Enact International Protocols for Virtual IP Enforcement- The territorial aspect of present IP rules generates notable enforcement gaps in the metaverse's borderless architecture. International organizations, including the WIPO, the World Trade Organization (WTO), and the United Nations Commission on International Trade Law (UNCITRAL), should lead the creation of legally enforceable international protocols for virtual IP enforcement in order to get beyond jurisdictional restrictions. These protocols have to create shared guidelines for digital attribution, acknowledgement of blockchain-authenticated intellectual property, and cross-border conflict resolution. Harmonized systems, especially, could reflect elements of the TRIPS Agreement while being adapted for the decentralization and interoperability the metaverse calls for.

2. Encourage Platform-Level Compliance and Interoperability Standards- The IP ecology of the metaverse is significantly shaped by platform operators. Regulatory systems have to demand minimum compliance requirements for licensing transparency, content modification, and attribution. Designing protocols that guarantee interoperability of digital rights across platforms could be assigned to standard-setting organizations as W3C and the International Organization for Standardization (ISO). These could comprise required metadata systems, uniform smart contract forms for licensing, and API-level integration of IP audit trails. Furthermore, complementing soft law approaches to guide ethical platform governance are voluntary codes of behaviour.

3. Promote Capacity Building in Metaverse IP Literacy- Legal systems only work as good as the users that negotiate them. National IP agencies, academic institutions, and professional groups should thus make investments in developing digital IP literacy. Programs for artists, developers, and small content providers should be specifically designed to grasp the subtleties of virtual IP protection, tokenization, and rights management. Concurrently, the court and law enforcement have to be ready to handle fresh infringement situations involving NFTs, avatars, and cross-platform replication. Legal awareness in the metaverse is a cure as much as a preventative strategy.

4. Support Public–Private Partnerships for Experimental Legal Sandboxes- Governments should create legal sandboxes allowing creativity inside a controlled setting to test new regulatory policies. To assess the impact of new licensing tools, DAO-governed IP registries, or algorithmic dispute resolution, public-private partnerships (PPRs) between regulators, IT companies, and intellectual property owners can replicate metaverse ecosystems. Such tests would provide an empirical foundation for the next legislation and guarantee that laws are created with an agile, future-proof viewpoint.

9. CONCLUSION

The metaverse marks a radical change in the digital economy, rewriting content creation, sharing, ownership, and commercialization. This paper makes clear that although theoretically strong, conventional IP models are progressively unfit for the multidimensional and distributed character of virtual settings. Along with user-generated material, NFTs, blockchain-authenticated works, and interoperable digital assets spreading, so too are the gaps in enforcement, recognition, and cross-border regulation.

Important conclusions of the research show that current IP rules, especially those based on territorial doctrines and manual enforcement systems, find it difficult to handle new kinds of infringement, attribution, and ownership. Takedown systems stay reactive, and national IP laws sometimes lack the flexibility needed to control metaverse-native content. Concurrent with these developments in technology, smart contracts, digital watermarks, and blockchain registries provide means to automate, authenticate, and decentralize IP protection in ways conventional law cannot.

Against this background, a change of IP rules becomes both legal and pragmatic in an urgent situation. Global reach, immersive engagement, and platform heterogeneity of the metaverse call for a hybrid governance model, one that combines emergent features, including metadata enforcement, DAO-based governance, and interoperable licensing standards, with enduring principles of originality and authorship.

Affirming the possibility of a pluralistic, code-aware, and stakeholder-inclusive framework for the metaverse closes this dissertation. Policymakers and stakeholders can build a strong legal infrastructure, one that preserves creator rights, promotes innovation, and guarantees fair access in the next frontier of digital life by combining ideas from both conventional IP law and digital innovation.