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# **BLOCKCHAIN AND INTELLECTUAL PROPERTY RIGHTS: A LEGAL AND TECHNOLOGICAL SHIFT IN THE INDIAN CONTEXT**

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## **ABSTRACT**

Blockchain technology is a new, techno-savvy game changer in various fields, including Intellectual Property Rights (IPR). It is a decentralised peer-to-peer network-based public, encrypted and immutable digital federated ledger system. One can store any data in a blockchain; this data is tamper-proof, cannot be tampered with without being noticed, and is also free from third-party intervention. Initially developed for cryptocurrencies, its features like immutability, traceability and security have far-reaching applications beyond finance. In the realm of IPR, the dual relationship IP system protects blockchain on one hand, and blockchain technology can be used to strengthen the IP regime on the other hand. With the world gearing up to use blockchain technology for many purposes, notably, the implementation of blockchain in IPR, be it registration, licensing or making of contracts, blockchain will enable tamper-proof data. It can be used to synchronise the internal and external search databases. Blockchain minimises risk and increases operational efficiency compared to traditional IP management systems. There has been a steady increase in patent filings using blockchain in India, thereby leveraging this technology for IP protection. International organisations like WIPO and the EU have effectively collaborated with IP offices across the globe, reflecting growing interest in using blockchain technology to maintain accurate and secure IP registers. While implementing this idea has been in the initial stage in many countries, India has not put a great effort into it, considering the legal and technical hurdles. There is a need for legislative and policy frameworks to embrace this shift, suggesting that mere adoption is not enough unless it is actively implemented and legally recognised. This study emphasises the scope of blockchain technology in intellectual property rights and its legal implications regarding registration. It also looks at the legal and technical hurdles for the implication of the same in the Indian legal system.

**Keywords:** Blockchain Technology, Intellectual Property Rights, IP Registration and Protection, Legal and Technical Challenges in India.

## **INTRODUCTION**

The accelerated development of digital technology has entirely transformed the way we produce, store, and exchange information and blockchain is a game changer beyond the crypto-foundations. Its main qualities of immutability, transparency, decentralisation, and security make it usable in resolving the long-term issues in the Intellectual Property Rights (IPR) system in India such as piracy, counterfeiting, slow paperwork, and lack of openness. In this paper I consider the ways in which blockchain would transform the IPR governance in India by establishing ownership records that are impossible to tamper with, implementing smart contracts to automate licensing and identifying infringements as they occur. Three general questions guide my research: how can blockchain be used to register, license and contract administration; what legal issues, particularly on data privacy and enforceability of smart contracts, will need to be addressed; and what law and policy reforms will be needed to implement a large-scale solution. It aims at the discovery of the blockchain potential in IPR processes, evaluation of legal and technical challenges, and propose a strategy to adopt in India, which is aligned with international best practices.

To find answers to these questions, I will use both primary and secondary research examining court cases such as *Ferid Allani and Saregama*, government schemes such as the National Blockchain Framework, and comparing the perspectives of WIPO and EUIPO. I further consider real life experiments such as Karnataka Land Chain and Certificate Chain of CBSE. The research demonstrates that blockchain may greatly enhance performance and trustworthiness in the IPR systems but India encounters a web of legal and technical challenges. On the one hand, there is no single blockchain law, which legally causes confusion concerning jurisdiction and data protection within the Digital Personal Data Protection Act of 2023. At the technical level, there are still issues such as scalability, interoperability, and integration with the existing infrastructure. It is not the absence of initiatives, but rather the transition of the isolated pilots and judicial decisions to the consistent, scalable, and legally sound national framework that drives the innovation and secures creators to make India a world leader in the blockchain-based management of IP rights.

## **LITERATURE REVIEW**

In my opinion, the body of works regarding blockchain and intellectual property rights (IPR) is fundamentally that blockchain is a game-changer that can revolutionize the creation,

registration, protection, licensing, and enforcement of IP. Some writers including B.P.Singh and Anand Kumar Tripathi in “*Blockchain Technology and Intellectual Property Rights*”<sup>1</sup> imagine it as a decentralised, encrypted, immutable registry that would resolve long-standing inefficiencies in IP administration. They note that blockchain is not only handy within the IP world, but may also be beneficial to other industries, such as healthcare and land registries. They also emphasize the ways in which it may prove particularly useful to MSMEs as it will provide them with a more comprehensive access to public IP data and reduce the risks of infringements. Equally important, Shatakshi Singh in “*IPP and Blockchain Technology*”<sup>2</sup> goes further and charts out the role of blockchain in the whole IP life cycle registration and licensing through enforcement and puts India in an international context where nations such as France and China and organisations such as WIPO are already experimenting with blockchain enabled IP systems. These articles provide a good theoretical foundation, but they continue to haunt on the absence of actual statistics and real-life applications in national IP offices and particularly in India.

The other theme that comes up big in the readings is the evidentiary and registration aspect of the same particularly with the unregistered IP rights. Anne Rose, in “*Blockchain: Transforming the Registration of IP Rights and Strengthening the Protection of Unregistered IP Rights*”<sup>3</sup> states that blockchain-based timestamping could be taken seriously in enhancing authorship, use, and originality claims, especially in trademarks, designs, and copyright, where the use or uniqueness is important. Similarly, in another article, “*IPR as a Catalyst for Achieving Innovation, Infrastructure and Industrialization*”<sup>4</sup>, author Sumukh Aggarwal defines blockchain as a trust anchor to unregistered rights, allowing creators to show priority and provenance without necessarily having to use centralised registries. Such contributions demonstrate the potential of blockchain to address institutional failures, but also create gaps on data validation, dispute resolution, and international standardisation, which remain unsolved yet, before blockchain records will be accorded uniform legal effect internationally.

The third academic line of research is concerned with institutional adoption and models of

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<sup>1</sup> B. P. Singh & Anand Kumar Tripathi, *Blockchain Technology and Intellectual Property Rights*, *J. Intell. Prop. Rts.* (2019)

<sup>2</sup> Shatakshi Singh, *IPR and Blockchain Technology*, *Indian J.L. & Legal Methods* 16, 692 (2022).

<sup>3</sup> Anne Rose, *Blockchain: Transforming the Registration of IP Rights and Strengthening the Protection of Unregistered IP Rights*, *WIPO Mag.* (2018).

<sup>4</sup> Sumukh Aggarwal, *IPR as a Catalyst for Achieving Innovation, Infrastructure and Industrialization*, *Indian J.L. & Legal Methods* 25, 1706 (2021).

governance. In the article by Nicolas Hohn - Hein, “*EU IP Office Launches First Blockchain-Based IP Register*”<sup>5</sup>, the first step undertaken by the European Union Intellectual Property Office in creating a blockchain-based trademark and design register is documented, as well as its broader involvement through the Anti-Counterfeiting Blockathon Forum. This demonstrates that blockchain can be scaled, which will allow tracing cross-border and enforcing supply chains, as well as licensing based on smart contracts. Simultaneously, Ruchi Mehta et al.<sup>6</sup>, in their article on the topic of the management of intellectual property rights with the help of blockchain, suggest a consortium model of blockchain to substitute the centralised IP registries. Although technically interesting, their framework remains highly theoretical, which is repeated throughout the literature: the inability to find in-the-field pilots, performance tests and governance structures compatible with current IP office functions and statutory mandates.

Lastly, some of the authors get straight to the point concerning legal and technical challenges that prevent blockchain to become a full-fledged participant in IP law. In the article, Gonenc Gurkaynak et al.<sup>7</sup> indicate doubts about the legal validity of blockchain records and smart contracts, and inconsistencies in jurisdiction regarding the identification of automated agreements (*Intellectual Property Law and Practice in the Blockchain Realm*). The issues with challenges such as scalability, interoperability, data privacy, and conflicts with regulatory regimes (such as data protection laws) are also identified by Vanathi Krishna K, in “*Role of Intellectual Property in Blockchain*”<sup>8</sup>, and E.E.Frolova and E.V.Kupichina, in “*Digital Tools for the Protection of Intellectual Property Rights*”<sup>9</sup>. Combined, these articles would tend to suggest that the potential of blockchain in the IP industry will remain mostly theoretical until we have articulated legislative frameworks, policy directives, stakeholder education, and interdisciplinary studies that would integrate legal studies with technical implementation. In India, the story is simple: we greatly require a customized legal guidebook that will help us to connect the technological innovation with our current IP laws and administrative realities.

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<sup>5</sup> Nicolas Hohn-Hein, *EU IP Office Launches First Blockchain-Based IP Register*, Clifford Chance: Talking Tech (Jan. 2022).

<sup>6</sup> Ruchi Mehta, Riya Nikhil Shah, Vidhi Rambhia & Vruddhi Mehta, *Intellectual Property Rights Management Using Blockchain*, Int’l J. Eng’g & Advanced Tech. (2021).

<sup>7</sup> Gönenç Gürkaynak, İlay Yılmaz, Burak Yeşilaltay & Berk Bengi, *Intellectual Property Law and Practice in the Blockchain Realm* (2018).

<sup>8</sup> Vanathi Krishna K., *Role of Intellectual Property in Blockchain*, Indian J. Nat’l L. & Tech. 3 (2022).

<sup>9</sup> E. E. Frolova & E. V. Kupichina, *Digital Tools for the Protection of Intellectual Property Rights: A Case Study of Blockchain and Artificial Intelligence*, Perm Univ. Herald: Jurid. Sci. 61 (2020).

## **1. THE TRANSFORMATIVE POTENTIAL OF BLOCKCHAIN FOR INTELLECTUAL PROPERTY MANAGEMENT**

### **1.1 DEFINING BLOCKCHAIN AND ITS FOUNDATIONAL PRINCIPLES**

Blockchain is simply a decentralized and tamper evident registry that is distributed among numerous computers in a network. The ledger is highly transparent and robust unlike having one central authority, because it is constantly distributed, and updated by people. This is largely due to cryptographic security and how each block is attached to the one before, using a hash and it is virtually impossible to cheat. Participants use consensus protocols such as proof-of-work, proof-of-stake, or another type that allow reaching agreement about the validity of a transaction without a central judge. The other important characteristic is the public and the private keys which are used to ensure ownership and to authorise operations safely. In addition to accounting, blockchain has programmability via so-called smart contracts, which are computer code fragments that execute particular actions when employers invoke them. The combination of these concepts helps achieve a safe, verifiable and automated control of rights and obligations and particularly in intellectual property<sup>10</sup>.

### **1.2 KEY APPLICATIONS AND BENEFITS IN IPR: FROM PROOF OF OWNERSHIP TO SMART CONTRACTS**

Therefore blockchain is already becoming a big opportunity in terms of transforming the manner of owning and securing intellectual property. The most interesting, to my mind, is the proof-of-ownership side. Authoring with a digital fingerprint of a work onto the chain provides the authors with a provable, time-stamped evidence of a work having existed at a given time. That is not a substitute to formal registration of copyright but may act as good evidence in lawsuits. Besides, the chain simplifies the establishment of decentralized registers on which ownership transfer, licensing, or rights assignment are on a public registry, and so it becomes more difficult to see rival claims emerge.

The other significant application is smart contracts. These computerized contracts are able to deal with licensing and royalty payments such that the creators receive fair royalty and immediate payments whenever their work is used. Just imagine a song on a blockchain platform

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<sup>10</sup> WIPO Report by the Blockchain Task Force (November 2020) 3  
[www.wipo.int/edocs/mdocs/cws/en/cws\\_8/cws\\_8\\_15-main1.pdf](http://www.wipo.int/edocs/mdocs/cws/en/cws_8/cws_8_15-main1.pdf)

and each time it is downloaded or streamed, it initiates micro-payments to the artists, producers, and rights holders. Smart contracts are able to even break territorial boundaries or quotas of use without paper work. In addition to digital items, physical IDs can be followed by blockchain and this is helpful in combating counterfeits in luxurious goods, pharmaceuticals and artworks. And of course, tokenization and NFTs create additional methods of creators to make money of their project, but remember that simply possessing a digital token does not necessarily provide copyright rights unless it is clearly mentioned in the contract.<sup>11</sup>

### 1.3 INTERNATIONAL AND GLOBAL CONTEXT: WIPO AND EU EFFORTS

At the international level, other organizations such as World Intellectual Property Organization (WIPO) have already realized that blockchain is disruptive to IP governance. WIPO established a Blockchain Task Force to conduct a study of how distributed ledger technologies can be uniformed and integrated into international IP settings. WIPO also tried out a utility service WIPO PROOF, which offered secure digital timestamps to demonstrate the availability of a work at one particular time. Although the service was later closed, it proved that WIPO was interested in testing new tools and indicated the potential and the challenges of utilizing blockchain in IP administration<sup>12</sup>.

Another area that the European Union has been proactive in this respect is the European Blockchain Services Infrastructure (EBSI), a public-sector initiative to provide a blockchain-based cross-border service. Although not targeted specifically at intellectual property, EBSI has provided an avenue to secure notarization and verifiable credentials in addition to digital product passports, which can be easily used to address IP and counterfeiting. The regulatory barriers related to blockchain that the EU initiative attempts to discover are also the data security issues and compliance with the General Data Protection Regulation (GDPR). As the characteristics of blockchain are predetermined immutability, it needs to be balanced with such rights as the right to be forgotten by designing the system with so-called off-chain storage systems and privacy-protecting measures.

All these international attempts represent the hope concerning and the fear of blockchain in the

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<sup>11</sup> Smart Contracts: Building Blocks for Digital Markets  
[www.fon.hum.uva.nl/rob/Courses/InformationInSpeech/CDROM/Literature/LOTwinterschool2006/szabo.best.vwh.net/smart](http://www.fon.hum.uva.nl/rob/Courses/InformationInSpeech/CDROM/Literature/LOTwinterschool2006/szabo.best.vwh.net/smart)

<sup>12</sup> World Intellectual Prop. Org. [WIPO], WIPO Blockchain White Paper: Opportunities and Challenges of Blockchain Technologies for Intellectual

domain of intellectual property. The potential of the technology is obvious: the technology can be utilized to provide improved evidence of ownership, automate licensing, and add more transparency to global value chains. Its success will however depend on how well it is assimilated into existing legal systems, works across borders and good governance to strike a balance between innovation and compliance.<sup>13</sup>

## 2. INDIA'S LEGAL AND TECHNICAL LANDSCAPE: PROGRESS AND HURDLES

### 2.1 THE EVOLVING LEGAL FRAMEWORK: JUDICIAL PRECEDENTS AND REGULATORY CLARITY

The legal situation regarding blockchain in India is still rather unfinished. It has nothing to do with a decision of the court or even a high level policy discussion but a concrete piece of law. No formal Blockchain Act in India yet, but regulators and the courts have been gradually indicating that they are in support of digital technology provided that it does not venture into the realm of illegality and abuse. *Internet and Mobile Association of India v. Reserve Bank of India*<sup>14</sup>, the Supreme Court invalidated the Reserve Bank's circular forbidding banks from conducting business with cryptocurrency exchanges. Although that was regarding cryptocurrencies, the court emphasized a bigger point innovation should not be tied down with unnecessary rules that in effect opens up legal business opportunities to blockchain businesses in the financial and legal environment of India.

Nevertheless, even clear regulations are spotty. The government continues to make a distinction between crypto speculation, which it is cautious about, and blockchain technology per se, which it is actively promoting in such sectors as supply chain, identity verification, and IP tracking. Other articles, such as the white paper by NITI Aayog of 2018, and others, reflect the same pro-tech, but weary of crypto attitude. That is to say that the appropriate law on distributed ledger tech has not come into being yet, so such issues as the enforceability of smart contracts, recognition of blockchain-based data across borders, and the ability of such records to be admissible in IP cases are still open to law<sup>15</sup>.

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<sup>13</sup> Michèle Finck, *Blockchain and the General Data Protection Regulation: Can Distributed Ledgers Be Squared with European Data Protection Law?* 1–3 (Eur. Parliamentary Research Serv., Study No. PE 634.445, 2019), [https://www.europarl.europa.eu/thinktank/en/document/EPRS\\_STU\(2019\)634445](https://www.europarl.europa.eu/thinktank/en/document/EPRS_STU(2019)634445).

<sup>14</sup> (2020) 10 SCC 274

<sup>15</sup> Ministry of Electronics & Info. Tech. (MeitY), Gov't of India, *National Strategy on Blockchain* 5–6 (Dec. 2021), <https://www.meity.gov.in/content/national-strategy-blockchain>.

## 2.2 GOVERNMENT INITIATIVES AND GROUND-LEVEL IMPLEMENTATION

India has been taking a lot with government-supported blockchain initiatives in government services despite the legal ambiguity. States such as Telangana, Andhra Pradesh and Maharashtra have begun pilot projects on land records, supply chain and e-governance. In an attempt to become a home to blockchain research and startup culture, Telangana even constituted a PPP into a so-called Blockchain District. Another interesting innovation, launched by the Coffee Board of India, is a blockchain marketplace that is tracking farm to cup, which is a cool concept that could be applied to IP of agriculture and geographical indicators.

At the national level, NITI Aayog published this thing titled Blockchain: The India Strategy, highlighting the most common applications of blockchain such as health records, pharma supply chains, and digital certificates. It demonstrates that the government is placing a bet in regards to the way blockchain can cause the systems to be nicer by enhancing transparency and trust. The truth however is that there is still a huge gap, pilot projects usually remain within their silos with little interoperability or true scalability between states. Besides, the majority of these efforts are a lab only implementation and we are yet to see how they would fare when implemented on a large scale to full blown IP registries or even international licensing<sup>16</sup>.

## 2.3 PRIMARY LEGAL AND TECHNICAL CHALLENGES: FROM DATA PRIVACY TO SCALABILITY

India's forays into blockchain are encouraging, but they are confronted with a number of legal and technical challenges that need to be overcome for the technology to gain mainstream momentum. Legally, the biggest concern is data privacy. The Personal Data Protection Act, 2023, though giving a structure to processing personal data, is hard to harmonize with the immutability principle of blockchain<sup>17</sup>. Rights like data deletion or modification conflict with the immutability of blockchain ledgers. This raises questions for projects that touch on sensitive individual data, such as IP licensing databases where ownership information can require updating.

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<sup>16</sup> NITI Aayog, Gov't of India, Blockchain: The India Strategy—Towards Enabling Ease of Business, Ease of Living and Ease of Governance (Part 1, Jan. 2020), [https://www.niti.gov.in/sites/default/files/2020-01/Blockchain\\_The\\_India\\_Strategy\\_Part\\_I.pdf](https://www.niti.gov.in/sites/default/files/2020-01/Blockchain_The_India_Strategy_Part_I.pdf).

<sup>17</sup> Digital Personal Data Protection Act, No. 22 of 2023, India Code <https://www.indiacode.nic.in/handle/123456789/24072>

Scalability is yet another problem. All of India's blockchain pilots have been done at a relatively small scale, but the question is whether such systems will be able to manage the sheer number of transactions needed for countrywide IP registries, court submissions, or commercial licensing platforms. Technical constraints like excessive energy use, delay in transaction settlement, and the expense of getting blockchain deployed with existing government systems are also hurdles.

Furthermore, enforceability of smart contracts in India is a developing matter. Although the Indian Contract Act, 1872, is general enough to cover agreements made by electronic means<sup>18</sup>, there are questions on how the courts will interpret autonomous code that does not meet classical contractual formalities. Indian courts have otherwise admitted electronic evidence under the Information Technology Act, 2000<sup>19</sup>, but it is yet to be tested whether blockchain records will be accorded comparable evidentiary value in IP cases. Pending such clarity, parties can continue to rely on old-fashioned contracts in conjunction with blockchain-based ones.

In combination, these challenges represent a paradox for India's experience with blockchain: the government is keen to use the technology for governance and transparency, but the absence of regulatory clarity, along with technical limitations, inhibits large-scale adoption. In order to advance, India will require not just legislative efforts specifically in contract law, data protection, and evidence but also ground-level capacity-building so that blockchain projects can be made large-scale, compatible with other systems, and usable by end-users.

### **3. TOWARDS A COHESIVE FRAMEWORK: RECOMMENDATIONS FOR INDIA**

#### **3.1 THE NEED FOR A SYNERGISTIC APPROACH**

The use of blockchain in IP management actually requires a collaborative approach between technology, law and policy. The IP system in India, which is regulated by the Patents Act of 1970, Copyright Act of 1957 and Trade Marks Act of 1999, is primarily concerned with protection by the registration, enforcement, and judicial ruling. Nevertheless, there are problems with patent backlog, digital pirates, and market counterfeits which reveal the flaws

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<sup>18</sup> Indian Contract Act, No. 9 of 1872, § 10, INDIA  
CODE, <https://www.indiacode.nic.in/handle/123456789/21839>

<sup>19</sup> Information Technology Act, No. 21 of 2000, § 65B, INDIA  
CODE, <https://www.indiacode.nic.in/handle/123456789/1999>

in the old system. The immutability, transparency and traceability of blockchain would fit into those gaps directly.<sup>20</sup>

Synergistic strategy entails having the technologists and lawyers literally speak to each other. An example may be that blockchain may produce time-stamped, immutable documents of inventions, copyrighted content, or trademark employment-documents that Indian courts have been in search of since the infringement issue arose. In the case of *Eastern book company v. D.B. Modak*<sup>21</sup>, the Supreme Court emphasized on originality and writing authorship. Those evidentiary disputes can be alleviated by records of blockchain in real time. This is all to say that blockchain should be regarded by India as a supplement and not a substitute to the existing IP protection.

### 3.2 POLICY AND LEGISLATIVE RECOMMENDATIONS

To get IP protection successfully to integrate blockchain, India must put a serious consideration in its regulatory and legislative system. The Patents Act and Copyright Act are currently rather lenient when it comes to the digital ledge as an indicator of ownership or prior use. Although Section 65B of the Indian Evidence Act, 1872 allows the use of electronic records as evidence, Indian courts still require a certificate of authenticity<sup>22</sup> such as in the case of *Anvar P. V. v. P.K. Basheer*<sup>23</sup>. Had the law been more explicit, it might have formally accepted blockchain-verified documents to be prima facie evidence of the ownership and utilisation of IP.

India should also establish robust data protection and privacy regulations on IP on blockchain networks to fit within the Digital Personal Data Protection Act of 2023. A regulatory sandbox, such as that provided by the RBI to fintech, could be introduced by the government to test blockchain solutions in copyright licensing, patent filing, and anti-counterfeiting trademarks. On the policy level, revising the National IPR Policy of 2016 to include blockchain as an IP management strategy would ensure that India is in line with the world trends<sup>24</sup>.

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<sup>20</sup> The Patents Act, 1970, No. 39 of 1970, INDIA CODE; The Copyright Act, 1957, No. 14 of 1957, INDIA CODE; The Trade Marks Act, 1999, No. 47 of 1999, INDIA CODE.

<sup>21</sup> (2008) 1 SCC 1

<sup>22</sup> The Indian Evidence Act, 1872, No. 1 of 1872, § 65B, INDIA CODE

<sup>23</sup> (2014) 10 SCC 473

<sup>24</sup> The Digital Personal Data Protection Act, 2023, No. 22 of 2023, INDIA CODE; National Intellectual Property Rights Policy, 2016 (India).

### 3.3 A MODEL FOR PUBLIC-PRIVATE COLLABORATION

The future of India requires a public-private partnership (PPP) model, which combines the effectiveness of governmental establishments with the creativity of developers of the blockchain. Indian Patent Office and Copyright Office could engage in collaboration with private blockchain to develop decentralised registries that would ensure authenticity and prevent slows in the bureaucracies. As an example, a trademark registry on the blockchain could automatically verify and issue warnings on possible conflicts, which would conserve time on the part of applicants and examiners<sup>25</sup>.

The use of blockchain in anti-counterfeiting is not a new idea in the private sector. The Indian courts have been directed towards effective enforcement against counterfeiters such as the case of *Cadila Health Care Ltd. v. Cadila Pharmaceuticals Ltd*<sup>26</sup> that brought about the issue of consumer protection and differentiation, as noted by the Supreme Court. Supply chain tracing with blockchain can also be used to prove infringement in those situations by providing tamper proof records of transactions. When the public agencies liaise with tech companies and start-ups in implementing such systems, it will become easier to enforce.

PPP model would also encourage capacity building activities. Training of IP officers, lawyers, and business persons in blockchain technologies can open the path towards more easily adopted ones. With the provision of tax incentives or government grants in moving towards blockchains, India could create a healthy ecosystem whereby law, technology, and other players in the market could collaborate in ensuring that the IP protection becomes more efficient, transparent, and innovation-friendly.<sup>27</sup>

### CONCLUSION

It is an opportunity as well as a challenge, dude, as the convergence of blockchain and intellectual property rights (IPR) in India. The above characteristics of blockchain such as immutability, transparency, decentralisation, and traceability have the potential to completely transform the way we document ownership, enforce contracts, and defend rights. These

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<sup>25</sup> The Trade Marks Act, 1999, No. 47 of 1999, INDIA CODE; Nat'l Inst. for Smart Gov't, Report on Blockchain Applications in Governance (Gov't of India).

<sup>26</sup> (2001) 5 SCC 73

<sup>27</sup> NITI Aayog, *Blockchain: The India Strategy* (2020); Ministry of Commerce & Indus., Gov't of India, National Intellectual Property Rights Policy (2016).

characteristics strike the major weak points of the Indian IPR system directly: slowness in registration, piracy, counterfeiting, and what is missing in the evidence at trials. Also, as we can see with WIPO and the EU, blockchain may create reliable, interoperable, and effective IP management systems.

Nevertheless, in the real sense, India is yet to overcome significant legal and technical challenges to implement blockchain in a large scale. Legal ambiguity arises because there is no clear statutory basis of blockchain records, it is uncertain how smart contracts can be enforced and the permanency of blockchain conflicts with the data-protection legislation which is still being developed in India. Technologically, scalability and interoperability problems as well as connecting it to old systems continue to keep its adoption to big size. Even though recent cases such as *Ferid Allani v. Union of India*<sup>28</sup> and *Saregama India Ltd. v. Next Radio Ltd*<sup>29</sup>, the courts winking in favor of the innovations of blockchain, the support of the judiciary is not enough to create a strong national framework.

We are, therefore, on the road to the future of India as being defined by the replacement of scattered pilot projects and isolated precedents by an extensive, legally-accepted, and repeatable blockchain-IPR ecosystem. Not only will this further protect the innovators and the creators but also make India a global leader in the knowledge economy.

## RECOMMENDATIONS

To have a successful incorporation of blockchain technology in Indian intellectual property system, there should be clarity in legislation. The main IP laws such as the Patents Act, 1970, the Copyright Act, 1957, and the Trade Marks Act, 1999 are to be revised to make it clear that blockchain-certified records are prima facie evidence of ownership, originality, and prior use. Such a transformation would reduce the evidentiary ambiguity and keep statutory law abreast with current technology. Meanwhile, we should have reforms on the Indian Evidence Act, 1872 to facilitate admission procedures of blockchain evidence. Certainly by abandoning the rigid certification requirements of Section 65B, and admitting the natural trustworthiness of cryptographically secured blockchain records, courts would be able to embrace such evidence more easily in IP controversies.

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<sup>28</sup> 2019 SCC OnLine Del 11867 (Del.).

<sup>29</sup> (2022) 9 SCC 1 (India).

It is also vital that smart contracts should be legally recognized, particularly those where the IP is licensed or royalty is involved. The amendments of the Indian contract act of 1872 or explicit judicial directions must affirm that smart contracts will be enforceable in a case where they possess basic contract elements such as free consent, a legal consideration and lawful object. A functional, technologically indifferent approach should be embraced by courts whereby agreements that are signed through blockchain can be considered as binding without the need of the traditional written documents. The change would make it possible to have automated license issuance, open royalty disbursement, and reduce cost of transactions, especially in the business of commercializing copyright and patent.

Lastly, there must be public-private partnership that has to be institutionalized so that the implementation runs smoothly. Decentralized or permissioned registries of intellectual property can be developed through strategic collaboration between the Indian Patent Office, Copyright Office and individual blockchain developers, to increase transparency, efficiency, and trust. The government may promote industry participation by granting incentives such as grants, tax rebates, and regulatory sandbox conditions to test blockchain-based IP solutions on a limited scale in other regions including licensing, royalty management, and anti-counterfeiting. It would result in this collaborative governance, which would develop technical capacity, promote industry adoption, and make India a blockchain-enabled IP protection leader of the future.