INTELLACTUAL PROPERTY RIGHTS AND INNOVATION BLOCKCHAIN TECHNOLOGY

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Abstract

Today's IP system is plague by several problems, ambiguity, and disadvantages. The blockchain, as underlying technology of Bitcoins, has implications that reach far beyond the original intent as virtual currency. In this paper, we investigate how blockchain technology can be encompassed in the innovation process and bring huge benefits to the patent system as well as copyrights, trade secrecy, defensive publications, and open innovation. Benefits and limitation of blockchain technology in IP industry. This paper will includes how blockchain technology can lead the Intellectual Property Rights (IPR) industry in upcoming future. Also, what are the potential of blockchain, how this technology helps to make Open innovation and 'smart' IP rights and 'smart' contracts to license the use of work.

This paper also covers blockchain also known as Distributed Ledger Technology which offers obvious possibilities for IP protection and registration and as evidence, either at the registry stage or in court. And how this technology is spreading in worldwide internationally and for the successful implementation, working of the institution like legislation and government of different countries and the measures taken by government of India for securing Intellectual Property ecosystem.

Keywords: Intellectual Property, Blockchain, Bitcoins, Innovation, Legislation, Distributed Ledger

1. Introduction

"Virtually all of the economic growth that has occurred since the eighteen century is ultimately attributable to innovation."(Baumol (2002)). It is, therefore, critical for a society to promote innovations. The challenge lies in the creation of an institutional system incentivizing creators and innovators sufficiently while guaranteeing that the community also benefits from their efforts as a whole.

Blockchain technology has become famous as the technology behind cryptocurrencies such as Bitcoin and Ethereum. In its basic form it is an open ledger of information that can be used to record and track transaction, and which is exchanged and verified on a peer-to-peer network. Blockchain and other distributed ledger technologies create a trustworthy and transparent record by allowing multiple parties to a transaction to verify what will be entered onto a ledger in advance without any single party having the ability to change and ledger entries later on. Each transaction or "Block" is transmitted to all the participants in the network and must be verified by each participant "node" solving a complex mathematical puzzle. Once the block is verified, it is added to the ledger or chain.

From the perspective of information, the real innovation of distributed ledger technology is that it ensures the integrity of the ledger by crowdsourcing oversight and removes the need for a central authority. In other words, transaction are verified and validated by the multiple computers that host the blockchain. For this reason it is seen as "near unhackable", because to change any of the information on it, a cyber- attack would have to strike all copies of the ledger simultaneously. While the traditional concept of blockchain is an open and anonymous network, there are also "private" blockchains which pre-screen who is allowed to administer the ledger.

Blockchain and related distributed ledger technologies offer interesting possibilities for IP protection and registration and as evidence, either at the registry stage or in court. They also promise a cost-effective way to speed up such processes (photo: Rick_Jo / iStock / Getty Images Plus).

https://www.wipo.int/wipo_magazine/en/2018/01/article_0005.html

2. Intellectual Rights and its Limit

One of the oldest institutional incentivizing system is the intellectual property rights system. Broadly speaking, intellectual property refers to "unique, value-adding creations of the human intellect that result from human ingenuity, creativity and inventiveness. " (Kalanje (2006)). In addition to the strategic options directly derived from the actual property rights, such as patent applications, design or trademark registration and copyrights, several other complementary or alternative strategies exist for innovators in the context of IP and innovation. The current IP industry landscape already has third party authenticators for trademarks and patents. These exist in the form of national patent and trademark offices as well as some international organisations.

2.1 The internet and copyright

Works covered by copyright "range from books, music, paintings, sculpture, and films, to computer programs, databases, advertisement, maps, and technical drawings.[1]" making them a very pertinent topic for creativity and innovation. Copyrights are supposed to "confer on the author non-economic rights (rights of paternity)" and also economic rights (copyright fees) for the use of their work." (Madiega (2016))

2.2 The patent system

Boucher et al. (2007) summarize many well-known problems of the patent system. Competitors can sometimes exploit the inventions (which must be made public at least 18 months after the patent application) before the innovator because the patent was not strong enough or because he was not capable of defending the patent against infringements. Patent trolls are defined as "companies that obtain the rights to one or more patents in order to profit by means of licensing and litigation, rather than by producing their own goods and services". One possible way to defend against patent trolls is the prior use defense, but it is apparent this defense is not optimal, either**.**

2.3 Defensive Publication: no reliable platform

A defensive publication should ideally serve two purposes. Firstly, it should guarantee the publisher's freedom to operate by preventing any competitor to get a patent on the invention. Secondly, by being public, it should benefit society by enriching its scientific and technological knowledge base. A defensive publication must, therefore, fulfil certain criteria to reach these goal effectively.

2.4 Open innovation: lack of coordination, ethics, and structure

Open innovation is still considered by many as an uncertain and risky business. Two major concerns are the lack of coordination among disparate groups of people and trust issues midst actors that did not engage in sufficiently frequent and repeated interactions (Fillippi, as cited by Bollier (2015)). The free rider problem and tragedy of the commons quickly arise and tarnish the optimistic vision of a mutually beneficial cooperation.

https://www.telsa.com/blog /all-our-patetn-are-belong-you%20retrieved%2012.03.2017

1.   http://www.wipo.int/copyright/en/   retrieved 28.03.201

3. Benefits of Blockchain

Blockchain system, the ledger is replicated in a large number of identical databases, each hosted and maintained by an interested party. When changes are entered in one copy, all the other copies are simultaneously updated. So as transactions occur, records of the value and assets exchanged are permanently entered in all ledgers. There is no need for third-party intermediaries to verify or transfer ownership. If a stock transaction took place on a blockchain-based system, it would be settled within seconds, securely and verifiably. (The infamous hacks that have hit bitcoin exchanges exposed weaknesses not in the blockchain itself but in separate systems linked to parties using the blockchain.).

3.1 Centralised vs peer-to-peer distributed solution

Compared to a centralised database solution, blockchain technology does not store transactions at one store/place. Instead all full participating nodes have a copy of the full ledger history. This solves the issue of database downtime and increases security of the overall system. Once set up, block-chain based solution does not rely on a central server. Instead all stores themselves act as servers as well as clients using peer-to-peer network communication. Doing this helps reduce server setup and maintenance efforts, cutting overall costs and downtime and improving resilience.

3.2 Transactions' immutability

Due to use of strong cryptography proof, transactions committed on blockchain are tamper-proof and immutable. Even if a few nodes in the network are hacked, the system can always detect and correct fraudulent transactions. This vastly improves the overall security of the system. The current system is very prone to tampering.

3.3 Customer privacy

In a blockchain solution, customer KYC is handled by a separate authorisation service which collects customer data (such as identity proof, phone number) and after successful verification issues a digital certificate which is linked with a public key in the main blockchain. If at any time the customer wants to delete his account, only his/her certificate and linking needs to be revoked as no customer PII data is stored in the blockchain itself. With increasing data privacy regulatory requirements, such as the European Union's GDPR to kick in next month, businesses need to provide a strong audit trail of customer data collection and provide the customer full control of his/her private data. This approach aims to minimise the exposure of customer data. This also removes concerns regarding incompatibility of GDPR and blockchain because of immutability of stored data and GDPR regulation related to data deletion.

https://www.thehindubusinessline.com/catalyst/using-blockchain-technology-for-loyalty-schemes/article23700167.ece

4. LIMITATION OF IPR

IP rights (IPRs) are currently regulated by third party authenticators. These authenticators are the Governments or administrative bodies of the geographical regions where the IP holder wants to secure and enforce rights. The limiting factor of such a system is its inherent physical limitations. This system is already starting to show cracks. The issues of piracy of copyrighted Literary, Dramatic and Musical works are a serious concern, which have been propelled extensively by the advent of internet sharing techniques, and as the market gets more globalized and digitized, it will become more imperative to look for a more feasible and reliable alternative.

Nonetheless, concerns regarding IPRs are not only limited to enforcement issues. Proper management of IP assets is also proving to be an equally challenging work. Thus IPRs, in tandem with larger contractual obligations, need a fresh look in the current digital landscape. Furthermore, many big companies today have a substantial portion of their industrial framework over internet, and thus physical and geographical limitations are diminishing for such companies. Accordingly, Blockchain is being seriously considered as a possible successor to this 'Physical System'. The 'classic-physical' model of IP rights enforcements is proving to be inadequate in this new Digital Age.'

5. BLOCKCHAIN & IP - POTENTIAL APPLICATIONS

Advent of Internet has provided a great encouragement to the IP industry to think outside the box and look for new and novel ways to protect IPRs. In the context of IP-heavy industries, Blockchain technology offers various obvious possibilities:

5.1 IP Registries

The most natural and obvious application for Blockchain within the realm of IP is their registration. Instead of opting for registering in a traditional centralized database, a decentralized Blockchain can be employed instead. IP offices could also make use of a centralized, Blockchain-technology-based, repository to record the full life-cycle of IP rights. This will help in developing an indisputable register to list out an all-inclusive timeline of an IP, right from the date of its application. This will really be extremely useful when dealing with claims for 'non-use revocation'. This would also be useful for audits, assignments, mergers and acquisitions.

Even unregistered IP rights (copyrights, etc.) can benefit greatly from a Blockchain based system as it could greatly aid in the issues relating to evidence of their conception and original authorship.

https://www.forbes.com/sites/andrewrossow/2018/07/24/how-can-we-make-intellectual-property-rights-smarter-with-the-blockchain/#50109f2685ece

5.2 Smart Contracts & Digital rights management (DRM)

With an advancement of technology, smart contracts can be programmed to perform simple functions. Smart Contracts have to be evolved gradually with constant review and updation since the specified conditions will also change with time. Smart Contracts can execute themselves, when specified conditions are met, without any manual intervention. Smart Contracts work on automatic mode with suo motu authority till the specified conditions are met. For example, coupled with the concept of 'Smart Contracts', one could license a copyright-protected work and the relative royalty payments could be executed to the licensor in real-time once the work is used by the licensee.

Blockchain or Distributed Ledger (DLT-based) archives could aid and facilitate the licensing of copyrighted works or other IP rights via use of such 'Smart Contracts'. Anti-Counterfeiting & Supply Chain Management Blockchain also offers many untouched opportunities in the sphere of off-line ecosystems regarding IP Rights.

5.3 Coupled with scan-able Blockchain-connected tags

Providing the ability to trace goods on an immutable Blockchain, Ledgers showing the relative ownership or authorized licensees would enable all persons in the supply chain, including consumers and authorities, to distinguish genuine products from counterfeit goods. This would also enable producers of goods to enforce their contracts and could also be used to satisfy regulatory requirements.

6. Blockchain for the IP Industry

The current IP industry landscape already has third party authenticators for trademarks and patents. These exist in the form of national patent and trademark offices as well as some international organisations. Current IP regulators and authenticators were created in the pre-digital age. Most countries around the world have their own systems for IP management. Whilst there is some consistency, there is also a great deal that is unique to each individual jurisdiction.

Before international trade was ubiquitous, this was less of an issue. Businesses grew their home market first before concentrating on internationalisation. More recently, particularly since the advent of the internet, this has become more of a problem. Ideas are international from inception. Businesses that exist on the Internet can internationalise incredibly quickly and effectively but managing their brands and ideas over multiple territories is incredibly challenging, demanding a great deal of time and cost. Blockchain could potentially help to make this less of an issue.

https://www.information-age.com/blockchain-role-future-ip-123473412/

https://www.forbes.com/sites/andrewrossow/2018/07/24/how-can-we-make-intellectual-property-rights-smarter-with-the-blockchain/#42523ad785ec

6.1 Ideas generation

When ideas are created, individuals and companies that create them must make important decisions about how to protect them. In cases where there is a clear and obvious technical development or new product or service, companies may look to patent this to generate commercial advantage.

Blockchain could take away such issues by enabling individuals and companies to identify their own innovation and place it on record within a Blockchain. Any future issues around who was the first to create an idea would then be easily identified through the blockchain's timestamp. This could resolve any number of complex and costly legal challenges that take place today around the initial creation of an idea that has not been immediately protected.

6.2 Ownership and licensing

The IP system is based on enabling companies that create ideas to benefit commercially from others that wish to use the innovation. However, this can be an area of immense confusion and frustration – particularly in complex electronic products where thousands of patents are deployed in a single device.

The mobile phone industry, for example, has seen a series of patent wars with several of the key manufacturers taking legal action against each other around alleged infringements of patents. Such arguments are expensive and distracting for companies, particularly where it is increasingly difficult to manufacture certain electronic devices without access to specific technologies.

6.3 IP transactions

As referenced earlier, managing IP in a globalised economy is extremely challenging. Companies need to decide where to seek protection for ideas and then individually apply for protection in relevant geographies. Blockchain offers the opportunity to place an initial idea on a Blockchain and then update it, creating a geographical scope for it. If the same Blockchain is being used by a network of law firms globally, each could action the process of protection and update the Blockchain accordingly. This significantly reduces complexity, potentially encouraging more companies to protect ideas.

6.4 Bring blockchain into the IP ecosystem

It is possible that early adoption of blockchain in IP will be private, company-wide blockchains to enable innovators in different countries to collaborate more effectively. For example, if several different researchers are collectively working on ideation for a company they can support each other by adding to each other's work via blockchain. This could see the rapid adoption of the technology in corporate R&D departments.

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https://hbr.org/2017/01/the-truth-about-blockchain
https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/Innovation/deloitte-uk-blockchain-full-report.pdf

7. "Smart" IP rights

The potential to use blockchain technology for the management of IP rights is vast. Recording IP rights in a distributed ledger rather than a traditional database could effectively turn them into "smart IP rights". Related is the idea of IP offices using distributed ledger technology to create "smart IP registries" in the form of a centralized solution run by the IP office as an accountable authority which would create an immutable record of events in the life of a registered IP right. It could include when a trademark was first applied for, registered, first used in trade; when a design, trademark or patent was licensed, assigned, and so on. It would also resolve the practicalities of collating, storing and providing such evidence.

The ability to track the entire life cycle of a right would have many benefits, including smoother IP right audits. It could also simplify the due diligence exercises that are necessary for IP transactions, for example in mergers and acquisitions. Confidentiality concerns on the side of the IP owners could be addressed by an opt-in scheme.

8. Evidence of use of IP rights

A ledger showing who owns what offers brand owners a potential reference point for their rights and for the extent those rights are used within the market. This could be particularly helpful in those jurisdictions where proof of first or genuine use is required or where the extent of use is crucial, such as in disputes or other proceedings involving recognition of well-known marks, or in defending a non-use revocation action.

9. Evidence of creatorship

Blockchain technology can also play an important role within the context of unregistered IP rights such as copyright (which in many jurisdictions, and under the terms of the Berne Convention for the Protection of Literary and Artistic Works, is not a registrable IP right) and unregistered design rights, since it can provide evidence of their conception, use, qualification requirements (such as originality and the country in which articles made to the design were first marketed) and status. Uploading an original design or work and details of its designer or creator to a blockchain will create a time-stamped record and solid evidence to prove these matters.

Distributed ledger technology-based repositories for unregistered IP rights are already being developed by several blockchain start-ups and could be an interesting and manageable solution for copyright protection as well as digital rights management.

10. Smart contracts and digital rights management

Smart contracts could be used to establish and enforce IP agreements such as licenses and allow the transmission of payments in real time to IP owners; "smart information" about IP rights in protected content, a song or an image, for example, could be encoded in digital form (in a music or an image file). That these ideas are fast becoming mainstream is evidenced by Kodak's recent launch of a blockchain-based image rights management platform and its own cryptocurrency.

https://www.cpacanada.ca/en/news/pivot-magazine/

11.Patenting Blockchain Services in USA and India

11.1 United States of America: Post-Alice Interpretation

Section 101 of the US Patent Act states the categories of inventions which are patentable as "new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement". The judicially recognized exceptions to these categories are "abstract ideas, laws of nature and natural phenomena". A two-step test was provided in US Supreme Court's 2014 opinion in Alice v. CLS Bank ("Alice") to determine the patent eligibility of computer-related inventions: (1) determine whether the claims are directed to a patent-ineligible concept (2) determine whether the claim's elements, considered both individually and as an ordered combination, contained an 'inventive concept' which transformed the nature of the claims into a patent-eligible application.

Under the second step, claims which only contain instructions for 'generic computer implementation' or whose use is merely limited to 'a particular technological environment' would not be granted patent protection. It was stated that the claims must contain 'additional features' to ensure that abstract ideas are not monopolized and that such claims on 'building blocks of human ingenuity' must integrate them into 'something more'. It was concluded that there must be an improvement in the functioning of the computer or an improvement in any technology or technological field.

11.2 India: The 'per se' Debate settled after Erricson

In India, Section 3(k) of the Patents Act lists that 'computer programmes, per se' are patent-ineligible subject matter. Previously, there has been a lot of debate about the interpretation of the term 'per se'. In 2015, the Delhi High Court in Telefonaktiebolaget Lm Ericsson v. Intex Technologies, stated that "any invention which has a technical contribution or has a technical effect and is not merely a computer program per se" is patentable.

In order to reach this decision the Court relied on the ratio of the above-discussed Alice case i.e. the invention must contribute something more than an 'abstract idea' and the European Court's 1986 Vicom decision which states that an invention must result in a technical effect/contribution and declared these tests similar to each other. However, the 2016 CRI Guidelines created confusion when it stated 'novel hardware' was one of the requirements for patentability of computer-related inventions.

11.3 Implications of Patenting Blockchain-based Services

Blockchain is based on open-source client software and this feature enables new users to join existing systems and other companies to copy this technology and improve upon it. Many argue that granting patents to blockchain-based services aids patent trolls i.e., non-practicing entities who guard their monopoly by using these patents as weapons for stifling innovation by small developers.

https://spicyip.com/2018/06/patenting-blockchain-services-in-usa-and-india.html

Conclusion

Blockchain technology for IP and innovation, and offered an overview of institutional measures in favour of its acceptance and implementation. Blockchain technology provided strong timestamping, proof-of-existence as well as the potential for smart contracts and enabled the creation of distributed, transparent, cost-effective and resilient environments open to all and where each transaction is auditable. Blockchain could have a significant role to play in the IP industry – if the industry can find a means to adopt the technology in the short and medium term. The technology has the potential to significantly support idea generators and those that work with them to create revenues from innovation. This will not happen overnight. It was simple to adopt blockchain for cryptocurrencies, where no central verification method existed to support the new currencies.

Applying Blockchain to an industry that already has proven (albeit often slow and challenging) methods will be more challenging. Ultimately, blockchain could be more impactful on the IP industry than it has been even to the financial services industries. The challenge will be in creating the right adoption path for the technology. Blockchain technology will have tremendous technology impact on the way the world innovates and protects innovation.

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Impact of technological blockchain paradigm on the movement of IP in digital space

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