

INFUSING BLOCKCHAIN TECHNOLOGY INTO THE IPR SECTOR : A ROADMAP

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Abstract

Blockchain is a component of the foreverbroadening canvass of scientificprogress which ranges from Artificial Intelligence and Virtualization to Internet of Things. The key description of blockchain technology – decentralization, and anonymity - make it pertinent to wireless network virtualization and other transformed applications. One area where much leeway has been made is smart contracts -self implementingagreements wherein the provisions can be set out in computer code. The presentarticleattempts to analyze the potentials for blockchain in the IP arena. It highlights the fact that the blockchain – IP boundary is based on the claims that IP administrative systems could useblockchain technology to implement provable IPRs where operations in blockchain could help in the event of conflicts. The paper also dwells uponthe worldwide efforts such as the one implemented by Franceand goes into judicial interventions such as a Chinese Court (in Hangzhou) that identifiedblockchain based evidence for the first time in 2018. Moreover, the article laments on the fact that no devoted law exists in India in this regard. It concludes with an analysis of probable hurdles to large scale application of blockchain in the field of IP and depicts a roadmap for future efforts.

Keywords: Artificial Intelligence, Blockchain Technology.

Introduction

Blockchain is a decentralized peer-to-peer network based public encrypted and irreversible digital ledger system. Working like a collective Google document, the ledger is a public database that records transactions in a everlastingmanner and distributes copies to all appropriate parties without the need for a third party to approve the transaction. The function of a blockchain can be described in three ways- technical, business and legal.

The first major use of this technology occurred with the creation of Bitcoin, which is a digital crypto-currency introduced in 2009. The seminal paper that introduced this technology to the world was penned by “Satoshi Nakamoto” (a pseudonym used by the author whose identity is still unknown) and was titled “ Bitcoin : A Peer to Peer Electronic Cash System. “ Traceability and reliability were the hallmarks set forth by Nakamoto in this pioneering method of executing transmit of value between peers. Trustworthiness and transparency are building into the system by allownumerous parties to the transaction to confirm what will be entered onto a ledger without any party having the capacity to change any ledger entry later on.

Transactions are witnessed within “blocks” on every computer in the network. New connections must be authenticated by all computers in the network by inspecting against all previous ones. As each computer in the network has its individual copy, security of data is enhanced and susceptibility to cyber assault is reduced vis-a-vis hitherto used models wherein data is accumulated in a single location. It is seen as almostunhackable because to alter any information on it, a cyber attack would have to hit all copies of the ledger concurrently. In addition that, data put into the blockchain cannot be tampered without being noticed. The technology involves storage of information in encrypted blocks made up of codes which are separately time imprinted.

Blockchains leverage technique from a field of computer science known as cryptography to mark every operation with a distinctive digital signature belongs to the user who

instigated the transaction. These signatures are held privately, but are demonstrable. This means that if a user with identity A sends money to identity B, anybody can validate that the money was sent by A, but cannot use A's signature for their own dealings. In addition to that, this cryptographic system constructs accountability while preventing identity fraud. Blockchain is mainly of two types- public and private. In the second case, only those who have consent can get the information. Private blockchains pre-screen who are authorized to govern the ledger.

Applications of Blockchain Technology

Blockchain is a part of the ever widening canvass of technological developments which range from Artificial Intelligence and Virtualization to Cloud Computing. As a disrupting technology, it can have an impact on the way we live and work. From being the technology behind crypto-currencies such as Ethereum, it has begun to make its existence felt in health care, voting systems, supply chain & logistics and other sectors too. For illustration, India's NITI Aayog is building a new immunisation infrastructure for the country- incorporated and improved by blockchain. In this connection, discussions are also in the pipeline on SuperCert- an antifraud identity intelligence blockchain solution for educational certificates. The key descriptions of blockchain technology make it pertinent to security services, smart homes, wireless network, virtualization and other different applications. In fact, the Gartner Blockchain Spectrum – projected by Gartner, the research and advisory firm- talks about 3 phases: a phase which began in 2012 and will last through the early 2020s, another phase anticipated to gain momentum in the market around 2023 and enhanced blockchain solution.

Smart Contracts

This is one area where much leeway has been made. Introduced by Nick Szabo in 1997, these are self executing contracts wherein the terms can be set out in computer code. When the parties to the contract accomplish their commitment, smart software verifies and implements the contract. Decentralized micropayments such as paying a very small fee to access pieces of a digital content (which may be a song or a news article) are thus made possible. Needless to say, the smart contract is stored in a blockchain. An example is the Ethereum – driven music platform “VOISE” wherein performers upload their music (and set their own prices) and users pay them for the music via electronic currency. Mention must also be made of the Open Music Initiative (OMI) by the Berklee College of Music in Boston, Massachusetts which aims to construct a catalogue in the form of a blockchain for resolving the problem of recognition of right holders.

The Blockchain- IP Interface

IPRs are presently regulated by third party authenticators. These authenticators are governments or organizational bodies of the geographical regions where the IP holder wants to protected rights. The restraining factor of such a system is its intrinsic physical limitation. In fact, this system is starting to crack. As the market gets more globalised and digitised, it is essential to look for an extra feasible and consistent substitute. The concerns regarding IPRs are by no means confined to enforcement but efficient and suitable administration of IP is also a formidable task. Thus IPRs require a fresh look in the existing digital landscape. The blockchain – IP boundary is mainly based on the assertion that IP management systems could use blockchain to insist on provable IPRs where demonstrable, irreversible action in blockchains could help in the event of a conflict.

The major potentials for the use of blockchain are:

(a) **Development of IPR registration** :However, it is not likely that such implementation will be done within the next 5-10 years even in countries like USA, China, Germany and Japan that are pioneers of blockchain technology.

(b) **Registration without middle man**:Today IP systems are extremely reliant on IP offices. The costs of sustaining such systems are substantial. If the costs connected with these activities are lowered by implementing a simpler registration, the goal of nurturing innovation through IP laws could be realised much more efficiently. This is exactly what blockchain technology attempts to carry out. Through this technique, the functions executed by the large number of institutions could be carried out by simple smartphone apps and patents and trademarks could be registered in different countries via easy-to-use mobile or web apps.

(c) **Synchronising search database and ensuring tamper proof data confirmation.**

(d) **Copyright registration and copyright management by right holders themselves**: Blockchain can be used to confirm evidence of not only registered but also unregistered IP rights. Using blockchain offers a more efficient means of copyright registration. Under the terms of the Berne Convention for the Protection of Literary & Artistic Works, copyright is not a registrable IP right. In such cases, if a user were to log into the registration website using block chain technology, registration is attainable at any time and in any place. This should be read with the fact that though registration is not obligatory, the registration certificate is a prima facie proof in a court of law and therefore puts the recipient in a position of great advantage. Given the expected surge in copyright registration needs in the years to come, blockchain technology could turn to be a blessing due to its decentralized nature. On the international front, special mention needs to be made of the Anne Copyright Blockchain that provides Digital Copyright Identifier registration services. Anne's mobile application, it should be mentioned here, operates 24x7.

(e) **Searching Pirated Content Online** :Monitoring of smart contracts using block chain can allow the author to save the work on the chain and assign a time stamp to the work. This type of contract can search for pirated content online. Once such pirated content is found, online copy right protection mechanisms can be triggered. Thus through a wide adoption of block chains in IP sector, copy right infringements can be contained in coming years.

The significance lies in the grim realism that from peer- to peer services such as Napster and Grokster to photographs on the web, copy rights have certainly not been respected. However use of copyrighted content can to some extent be avoided using blockchain technology. Considering that a file is duplicated thousands of times across the net work, this network is intended to frequently update so that all records are consistent. Consequently whenever a copyrighted file is used illegitimately, a digital ledger holding the owner's information and transaction history is public and verifiable. For instance, "Binded" touts itself as the world's first copy right proposals for block chain creating an exclusive finger print for each copyright record. By tracking copyright records, "Binded" makes possible copyright protection through blockchain. Moreover, with a

digital fingerprint at its fingertips, owners can police online sites which use them. Other service contributors like “Copytrack” are also blockchain-based copyright platforms.

(f) Trade mark securing blockchains: Informations are galore that companies like Kbyun.com are working in this direction. In fact, on the trade mark front, application of blockchain is in recording prior use (viz) proving that the mark in question was used at a certain date. All that is essential is that the right holder uploads evidence into the blockchain and creates a chain with time stamp of first use of the mark.

(g) Encrypting trade secrets: Blockchain technology uses a hash algorithm. As the recorded information is not in the form of trade secret but in the form of hash value, the exact content of the trade secret is not exposed at the same time ensuring that evidence can be put forth that the file existed at a definite point of time.

(h) Tracking theft of trade secrets: Trade secrets are usually stolen by employees who subsequently join a competitor or start their own business. Proving that the trade secret had indeed been stolen often poses an overwhelming task. But if blockchain is used, outline of downloaded information is left behind enabling the owner of the trade secret to trace the source of theft. This helps in consequent legal proceedings.

(i) Getting patent protection for blockchain invention: Given that the core of blockchain is scientific in nature it is likely that it will be suitable for protection in many countries. Whether a particular block chain creation is entitled for patenting in a given country will depend on the invention. For illustration, applying blockchain to acknowledged fiscal practices will be tough to guard. But innovations that apply the technology in a novel way to alter present financial practices are in all likelihood eligible. In fact, a lot of initial copyright filings were made by banks and financial institutions, but now applications are being filed across a broad spectrum of industries. According to WIPO databases, there were 406 applications for blockchain patents in 2017. Tech giants like Qualcomm, IBM, MasterCard and Microsoft are among the top applicants.

(j) Evidence of first inventorship in patents : This is an area wherein blockchain has massive utility. This can also lead to minimisation of litigations.

(k) Enforcing IP agreements using smart contracts: In IP, transactions such as buying a patent involve various steps, all of which can be cut down using smart contracts. Companies such as UJO which is an open platform that uses block chain technology to automate royalty payments using smart contracts have already begun to emerge. Evidence that these ideas are fast catching up can be seen from Kodak's launch of a blockchain-based image rights management platform and its own cryptocurrency.

(l) Block chain as a tool to strengthen IP regime: In the present scheme of things, IP records are being sustained at different IP offices in silos, chances of the data therein being incompatible. In such a circumstance where constant updation poses difficulties, use of blockchain technology in sustaining these IP registers can come in as a saviour. Instead of opting for registering a customary database, a decentralized blockchain can be employed. This technology could be used to record the full cycle of IP rights and could be

useful for audits, mergers and claims for non-use revocation. For instance, in trademarks, this could mean when a mark was first applied for, first used in trade and when it was licensed/ assigned. This could simplify exercises that are needed for IP transactions. Moreover, collecting information on the use of the mark in trade/ commerce on a blockchain based official mark register would allocate the pertinent IP office to be notified almost instantaneously. This would result in reliable time-stamped evidence of actual use and frequency of use of a mark in trade both of which are relevant in confirming secondary meaning or goodwill in a trademark.

(m) Blockchain for enabling IP marketplace: Blockchain can be used as a platform where inventors can place their digital works in the form of ledgers with short descriptions thereby acting as an IP marketplace.

(n) Remote access to IP information across different transnational offices and cooperation between IP offices and WIPO: Maintaining data using blockchain technology can prove to be a boon while working as International Searching Authority (ISA) / International Preliminary Examining Authority (IPEA) and Receiving Office (RO). It can also come in handy while collaborating with other IP offices in the backdrop of schemes such as Patent Prosecution Highway. The immutability and traceability of blockchains can come in to be helpful in such circumstances. Blockchain can thus resolve the problem of unifying IP systems across countries.

(o) Anti-Counterfeiting: Coupled with scanable blockchain-connected tags or imprints to goods, ledgers would facilitate all persons to make distinction of genuine products from counterfeit goods. If a brand owner informs customs authorities about the security description that authentic products should have, then the nonexistence of such description is an easy way for border officials to check whether a product is counterfeit. The technology could also be used along with certification marks like Woolmark. Through blockchain, transactions via e-contracts can be recorded at every stage of the chain which would be useful for seizing counterfeit goods by customs authorities thereby closing their doorway into domestic market. Blockchain may also be used in retrieval of stolen and parallel-imported goods.

(p) Applications in tandem with AI : In concurrence with AI, blockchain technology can work wonders. An example is the use of CAD (Computer Aided Design). Taking a photograph of a design from three divergent angles is adequate to generate a CAD. Such a CAD could be uploaded to a block chain based app that could search the complete database (encompassing all design registered in the history of the IP regime) for related designs and the right could be decided using an AI based appraisal tool.

International efforts

France is the first country to regulate securities on block chain systems. In April 2016, the French Government decided to legislate rules concerning mini-bonds. The order for the first time defined blockchain as “a shared electronic recording system allowing for authentication”

In 2016, Vermont passed legislation declaring that block chain receipts accompanied by written declaration of a person attesting to the details of the transaction are admissible. Under 12 VSA paragraph 1913, block chain receipts are also presumed to be authentic pursuant to Vermont Rules of Evidence. In 2017 Delaware General Corporation Law was amended to allow organizations to maintain business records using “distributed electronic networks or databases”. Arizona amended the Electronic Transactions Act to include blockchain records .Ohio passed similar Legislation in 2018.

In 2018, a Chinese Court (in Hangzhou) acknowledged blockchain based evidence for the first time. In 2019, the Apex Court of China confirmed the use of evidences confirmed on blockchain. US Congress has formed a Congressional Blockchain Caucus. As per the present EU law (Regulation No. 910/2014) a block chain record would be deemed to be an electronic signature and the thereof as an “electronic time stamp”.

In India however there is no devoted law that administers the operation of blockchains. Even though, Section 65B (admissibility of electronic records) of the Indian Evidence Act may be of crucial significance.

Challenges

The application of blockchain to IP faces challenges from at least four aspects namely technical, marketing/business, behavioural/educational and legal/regulatory. One, of course, is the extremely high energy consumption. Powering all nodes makes blockchain one of the expensive databases. Likewise due to the nature of the underlying technology, the regulations of a blockchain are predefined. For instance, the rules of Bitcoin indicate that there will be only 21 million bitcoins ever mined. These types of preventive regulations make the timing of moving them from a customary database to the block chain an especially tricky matter. These shifts cannot be executed too rapidly as blockchain technology is still overwhelmed by problems.

One more confront to be addressed is throughput and bandwidth in the blockchain network. Vis-a-vis transaction platforms such as VISA or PayPal, blockchain is considerably slower at this time. For instance if we inspect the transaction processing competence of the Bitcoin blockchain, we find that it can handle 2-5 TPS (Transactions per second) as compared to VISA which can handle 56000 TPS. True, different ways have been introduced to overcome this through technologies (such as Segwit update to Bitcoin) but we have miles to go. The question that arises is : Is existing network bandwidth sufficient for block chain transactions to do real-time updates in the systems.

Questions of latency/delay in the blockchain network and apprehensions of chocking of blockchain systems in case of huge number of transactions within a portion of a second also arise. How often should the ledger be updated? What is the least reasonable delay that is acceptable? And last but not least, how can we efficiently address an assault wherein an opponent disallows a miner's block from reaching all other miners for a long time?

To summarise, even a decade after its invention, blockchain is still in its early stages and there are potential obstacles to large scale application of blockchain in the field of IP. These also include questions of governing laws ,apprehension of enforceability of smart

rights, data safety as well as security and confidentiality concerns not to point out definitions for smart contracts. Even though, in IP-heavy industries, blockchain technology suggests possibilities for IP protection & registration and as evidence, either at the registry stage or in Court.

But the vital question will turnaround efforts across the globe towards developing interoperability protocols. Some work has started under the aegis of the ISO (International Organization for Standardization) which is working on the ISO/TC307 for blockchain. But that is only a modest commencement. Only when the rules are definitely recognized can regulators bestow blockchain with legal status.

On the legal side, it should be pointed out here that the law makes possible individuals to produce blockchain records as time-stamped evidence in various jurisdictions such as EU. Therefore the next step will be a legislative amendment that would permit blockchain registrations to be deemed registrations. Though problems will begin on blank spots, these are easier undertaken than areas which are previously regulated. To address these problems, efforts are required to map the special effects of blockchain, determine if they fall under already legislated laws and if so, how they are so dealt with. Till these efforts bear fruit, the desire of blockchain technology pervading IP law and practice will at best remain to be a paper tiger.

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