Blockchain Technology for Online Law System

Shivani Dubey[1], Ajay Kumar Sahu[2], Vikas Singhal[3], Ayush Srivastava[4], Chirag Gupta[5]

Department of Information Technology
Greater Noida Institute of Technology (Engineering Institute), Greater Noida, India

Abstract: With the advent of modern information and communication technology, the relationship between the two has significantly evolved, as the latter is increasingly used as a complement or a supplement to the former. Lawyers, judges and policy makers are increasingly surrounded by digital information and software tools, which they use in their daily routine. While these tools can be used to support their activities, technological innovation also raises a variety of challenges, which the legal profession will eventually need to address. Specifically, it is possible to identify four distinct phases, in the late 20th and early 21st century, that represent the evolving relationship between law and technology. Besides, as opposed to traditional legal rules, which are inherently flexible and ambiguous, technical rules are highly formalized and leave little to no room for ambiguity, thereby eliminating the need for judicial arbitration. In this research paper, from a purely technological standpoint, smart contracts can be used to emulate, or at least simulate the function of legal contracts through technology. Additionally, clients can easily communicate with their lawyers through the platform's chat feature, which reduces the need for on-site meetings and is particularly useful for remote communication. Furthermore, the platform enables clients to make payments directly through the system, streamlining the process for both clients and lawyers. Overall, our platform offers a more personalized and convenient experience for both representatives and clients.

I. INTRODUCTION

Most of the legal informatics research to date has focused on translating legal provisions into computer code. Both policy makers and judges are increasingly relying on computer applications (e.g. expert systems, as in Waterman et al, 1986) to retrieve legal provisions or case law, analyse or compare them, so as to build a proper argumentation and ideally come up with better decisions. This is a difficult task for many different reasons, including the ambiguity of human language and the need for legal norms to be flexible and fact dependent. Despite these challenges, governmental institutions and businesses worldwide increasingly rely on rule-based representations of specific knowledge domains (such as health care and tax or financial regulations) for automated or semiautomated decision-making (see e.g. specific software tools for taxation, accounting and credit score assessment). In this paper, we have discussed the law system is important role in our country. Public order in the country is an important factor in ensuring peace and tranquillity in the country [1]. If there is law, then peace will come naturally. One of the interesting ideas to use is an online law program that will keep users up to date with the current laws in the country. Crime is increasing day by day in our country. In our legal system, no one knows about the law. It's easier if they know which rule applies to which situation. This is one of the rare ideas people can get. People do not understand the laws that exist in the country. People will learn current laws using this app. The app allows them to search, find and learn about the specific policies they need and can improve their knowledge about them. They will not know the penalty for certain crimes. The crime rate in the country can be easily reduced by knowing the current laws in the country. Law Tech is a portal for lawyers and their clients. Using the system, clients can be contacted directly without the need to go to the attorney's office in person. Project Online Legal System is software that contains all the laws of the IPC so that people can find and research laws for crimes. The laws are arranged into various segments as indicated by a few keywords. There is likewise look alternatively accessible where a client can discover or seek as indicated by his prerequisite by entering his query. There is additionally an office accessible for clients to get in contact with legal counsellors. Surveys are provided where customers can ask questions and also record the case and send the mail to the court. This product contains information from all relevant courts in a district for similar crimes [2].

II. RELATED WORK

More recently, a new technology has emerged which might change the way we think about law. This technology is the blockchain, a decentralized, secure and incorruptible database (or public ledger) that constitutes the foundational tool for peer-to-peer value creation and trust less transactions. Introduced in 2009 with the Bitcoin network —as the underlying infrastructure for a decentralized payment system— the technology has rapidly evolved to acquire a life of its own. Today, the blockchain is used in many other kinds of applications, from financial applications to machine-to-machine communication, decentralized organizations and peer-to-peer collaboration. As a trust less technology, the blockchain eliminates the need for trust between parties, enabling the

coordination of a large number of individuals that do not know (and therefore do not necessarily trust) each other. In today's society, lawyers are facing an increase in court cases, making it a daunting task to manage and track all the complex case details. However, with the advancements in technology, Law Tech has made this task as simple as a button click. Law Tech is an efficient bookkeeping system that utilizes cutting-edge software development to enable lawyers to easily keep track of case details, settlements, and timekeeping. Without this software, managing cases manually can be extremely time-consuming [3]. Law Tech not only benefits lawyers but also allows clients to track their case status and communicate directly with their lawyers via email or chat. Clients can easily access case reports through various search options such as case date, name, party name, number, and court status. Additionally, the advanced search option provides a complete overview of all stored data.

The literature review provides insights into the role and impact of online law system web applications. These platforms aim to enhance access to justice, provide legal information, facilitate dispute resolution, and streamline legal processes. User-friendly interfaces, comprehensive legal databases, and secure data handling are crucial for the effectiveness and trustworthiness of these platforms. In the context of developing countries, online law systems can play a significant role in promoting legal awareness and access to justice. However, challenges such as limited internet connectivity and low digital literacy rates need to be addressed. Tailored solutions that consider the specific legal needs and cultural contexts of developing nations are essential. User experience (UX) design is crucial for online law system web applications. Intuitive interfaces, ease of navigation, and user engagement are important considerations. Feedback mechanisms, personalized recommendations, and AI-driven features can enhance the user experience. Privacy and security concerns must be addressed in online law system web applications [4]. Robust data protection measures, secure authentication protocols, and encryption techniques are vital for safeguarding sensitive legal information. Legal frameworks and regulations are needed to ensure responsible handling of user data.

In addition to supporting or complementing the law, code can also be deployed as a way to avoid or bypass the law. The popular Napster case is a good example of that (Ku, 2002). Launched in 1999, Napster presented itself as a web service providing users with the capability of sharing musical files with each other. However, the company faced several legal difficulties related to copyright infringement issues, and was rapidly forced to shut down the service. In order to avoid a similar outcome, decentralized protocols for peer-to-peer (P2P) file sharing (such as BitTorrent) have been subsequently implemented, to avoid the need for a central point of failure (or control) which could be legally prosecuted and shut down (Pouwelse et al, 2005). Up until now, all legal attempts at shutting down BitTorrent have failed — an illustration of how software code can successfully be used to circumvent law-originated rules. Finally, code may introduce new rules which have little or nothing to do with existing laws. For instance, many P2P file sharing protocols embed in their code the requirement for users to share content before they can download more content, thereby enforcing some form of cooperation among users. But the effect of code in shaping online behavior goes much deeper than that. Most relevant in this context is the function of Graphical User Interfaces (GUI), whose design has been extensively studied (in the fields of Human Computer Interaction and Science and Technology Studies) to analyze the social and political implications it engenders (Kannabiran and Petersen, 2010; Patrick and Kenny, 2003) [5]. Online service providers frequently rely on code (or algorithms) to affect or influence the behavior of their user-base (Pasquale, 2015). In this regard, Facebook has been often criticized for its obscure and inaccessible privacy settings (Hargittai, 2010), for its Orwellian social environment (where whomever oversteps the blurry lines of the Terms of Use is expelled from the platform), for its oversimplification of human emotions (through the "Like" button), for manipulating user emotions and interactions (Kramer et al., 2014) and for promoting individualistic and narcissistic values, only with a view to maximize its own profits (Lovink 2013). This kind of paralegal regulation can also be achieved via hardware-software integrated systems, such as CCTV surveillance cameras, which modify user behavior sometimes in unexpected ways (Neyland, 2006). In all cases, the code and underlying algorithms may have implicit biases (many times unforeseen) that might result in discrimination, unfairness, surveillance, or questionable associations (Gillespie, 2014; Ziewitz, 2016) [6].

III. BLOCK CHAIN TECHNOLOGY

The blockchain has been first introduced by Bitcoin, a decentralized payment system that operates independently of any government or central bank. A blockchain is a decentralized database (or state machine) that relies on a set of cryptographic primitives to ensure data integrity and authenticity. Data stored in a blockchain cannot be retroactively modified, so that the 'state' of the blockchain can only be updated through consensus (i.e. with approval of more than 50% of the network nodes) by adding new data to it. In this sense, the blockchain can be regarded as cryptographically secure append-only database, which operates without the need of any central authority or clearing house. As opposed to the Bitcoin blockchain, which was specifically designed to operate as a decentralized payment system, modern blockchain architectures (such as Ethereum, in Buterin 2014) introduced additional functionalities, allowing for small snippets of code to be deployed directly on the blockchain and to be executed in a decentralized manner by every node in the network. These are commonly referred as smart contracts (SC), in that they enable people to enter into a contractual relationship with other people (or machines) through a simple transaction on the blockchain. Smart contracts were first described by Nick Szabo in the late 1990s. Szabo (1997) envisioned placing contracts into code so that they could be both "trust less" and self-enforcing, thereby enhancing the efficiency and removing the ambiguity of traditional contractual relationships. Beyond increased speed and efficiency, an important benefit of smart contracts over traditional contracts is the lack of textual ambiguity, as their provisions are written in a formal language that must be understood by a machine. Smart contracts aim to emulate the logic of contractual clauses. They are computer programs that facilitate the negotiation, verify and enforce the performance of a contract, or that can even obviate the need for an underlying contractual agreement between parties (Szabo, 1997) [7]. In fact, smart contracts are able to automatically execute the terms of a specific agreement, providing trustless transactions via integrated enforcement mechanisms. As such, smart contracts can support the performance of contracts, reducing costs of negotiation, verification and enforcement by turning legal obligations into self-executing transactions. Earlier examples of (non blockchain-based) smart contracts are traditional vending machines; phone locking by telecom providers; DRM systems; cars incorporating automated speed limitations; etc. When smart contracts are implemented on a blockchain, their execution is not performed on a central server, but is rather distributed amongst the network of nodes. Blockchain-based smart contracts are therefore more sophisticated than traditional means of technological regulation in that they qualify as computer software code which is both

autonomous— as it does not depend on any given third party to operate, and independent — as it cannot be controlled by anyone (De Filippi and Wright, 2015).

In the existing system, the implementation of law systems and section analysis relies heavily on manual processes and paper-based work. These laws and sections are typically displayed in courtrooms or law books, which may not be easily accessible to the general public for acquiring knowledge about the law. When individuals seek to view and obtain law details through a specific lawyer, it can result in overcrowding and logistical challenges. Moreover, lawyers themselves may occasionally overlook certain law sections, leading to potential issues. Retrieving information from books or collecting data on specific laws can be time-consuming and prone to human error. Additionally, when law section details are recorded in ledgers, there may be inaccuracies in the provided percentages, which can create difficulties and confusion.

IV. PROPOSED SYTEM

In the proposed system, the administration will have the ability to input law and section details, as well as criminal information related to each crime, through an online platform. The administrator will have access to comprehensive results and data on all lawyers, including their assigned courts, public information, and criminal details for future reference and clarification purposes. Both lawyers and the general public will be able to access detailed information on law sections specific to each constituency, as well as court details for each state individually. Additionally, this application will provide a valuable resource for the public to obtain personal information about lawyers practicing in various courts and departments. This feature will be particularly beneficial for individuals facing legal issues, as they can easily communicate with lawyers and gain a better understanding of the relevant laws. Furthermore, the application will facilitate quick and easy access to accurate information for public departments and private institutions, thereby enhancing operational efficiency and effectiveness [8].

V. PROPOSED METHODOLOGY

The objective of the Online Law System is to facilitate the sharing of information within the organization and across different states of the country, particularly regarding Crime & Criminals. This information sharing is essential for ensuring the effective functioning of the Police. To achieve integration at the national level, the system relies on the use of the Seven Integrated Police Forms, which have been standardized by the National Crime Records Bureau, to serve as the foundation for the development of the Crime Module of the Criminal Justice System. These forms contain a comprehensive range of information that is required by the Criminal Justice System and are used to maintain the database records. Having programming skills is often insufficient in the Computer Science field when it comes to implementing a well-designed application that fully meets customer needs and requirements. In many cases, a thorough understanding of the processes that need to be digitized and automated is necessary for successful application development. for my capstone project, which involved developing a web application, I faced the challenge of comprehending Indian law procedures, technical terminology, and concepts. Consequently, extensive preliminary research was essential to build a robust application. I actively searched the internet to acquire the knowledge required to develop a well-rounded application. Additionally, I conducted interviews with Indian lawyers to gather as much information as possible and establish a solid foundation for the application. In terms of Software Engineering methodology, I opted for the incremental method. This approach involved breaking down the application into smaller increments, allowing me to make necessary modifications throughout the development process. This iterative approach ensured flexibility and enabled continuous improvement of the application. To summarize, in the Computer Science field, proficiency in programming is often inadequate for implementing a fully satisfactory and well-designed application. A comprehensive understanding of the processes to be automated is crucial. In my capstone project, I focused on understanding Indian law procedures and consulted legal professionals, conducting extensive preliminary research. Employing the incremental method in Software Engineering allowed me to develop the application incrementally, making necessary adjustments along the way.

VI. SMART CONTRACT

Smart contracts are self-executing software code that runs on a blockchain. They are not in themselves contracts, and often are not particularly smart. Contract law will likely apply to the underlying transactions between the parties using smart contracts, assuming that the arrangement between the participants otherwise fulfils the requirements for contract formation. The code in the smart contract defines the terms of an agreement on an "if" and "else" basis and then automatically enforces those terms if and when the specific criteria programmed into the code are met. For example, the execution of a smart contract can be verified by the network of users on a blockchain system, removing the requirement of a trusted third-party intermediary. Smart contracts therefore have the potential to reduce costs in areas that typically rely on an intermediary today, such as clearing and settlement. As demonstrated in 2016 by the hack of the Decentralized Autonomous Organization (DAO) public blockchain, it is possible to target smart contracts that are run on blockchain systems.10 In the instance of DAO, the hacker was able to move approximately $50 million in investor funds to a sub-contract that the hacker controlled. This type of attack is less likely to occur in private blockchain systems due to the number of users that have access to the smart contract; however, features should be built into the smart contract to ensure that any hack can be corrected retroactively. As mentioned above, traditional contract law may well apply to the underlying transactions embodied by smart contracts and, as such, the same liability issues apply to smart contracts. Software developers could therefore be liable for poorly written software code that results in a loss for their client, either through exploitation such as the DAO hack, or as a result of the code executing in a way not intended by the parties to the transaction [9].

VII. CONCLUSION & FUTURE SCOPE

There are, indeed, exciting potentials to explore with this technology —yet, there are just as many scary scenarios we may easily step in. With the blockchain, the legal challenges which were raised in the past by DRM systems could now be raised once again (with a much broader impact this time) by blockchain-enabled devices, operating according to technical rules dictated by smart-contracts on a blockchain (e.g. door locks opening only when presented with a valid cryptographic token, self-driving cars negotiating speed on the highway, etc.). Given the ex-ante enforcement of regulation by code, combined with the lack of flexibility of its technical rules, blockchain-enabled devices cannot distinguish between routine situations and edge-cases that might require a different type of treatment (e.g. the need for opening a door in the event of a fire, or speeding up to rescue a wounded person). Law is intentionally ambiguous, so that it can be more easily applied on a case-by-case basis. It is the overlapping of multiple legal provisions which creates a solid regulatory framework, with multiple limitations and exceptions in order to accommodate the complexity and unpredictability of human society. If we adopt Blockchain technology in the field of law and legal services, we see that it will have a cascading impact in many areas. Entire business processes will undergo a sea transformation. Litigation process itself will get simplified. The burden on courts will be drastically reduced. More and more economic activities can be brought under the ambit of contract law. Many jobs will obviously be automated. But it will open up new areas where law is applied. The Justice process can focus more on niche areas like criminal law where subjective interpretation of human actions is a necessary part of the Natural Justice system. But all this disruptive change can be brought about in an orderly manner only if Controlled Blockchains are deployed. Instead of destroying existing systems, we can shift existing systems to newer platforms with minimal disruption and maximal continuity. Unregulated Blockchains can indeed be destructive. On the other hand, Controlled Blockchains allow the power of Blockchain technology to be harnessed in the best and smoothest way possible.

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