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Transformation Framework Design on Digital Copyright Entities Using Blockchain Technology

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Abstract

This research is based on the national need to build an effective HKI protection system. Results in the form of human intellectual work that have very high values should receive adequate regulatory protection supported by a sense of justice & be rewarded according to their intellectual output. Copyright protection for creators and copyright holders according to Law Number 28 of 2014 concerning Copyright. Article 1 number 1 & Article 24 paragraph (1) & (2). So according to the parallel growth of science and the number of outputs of work found and technology which is very rapid, has a great effect on human life. With this background, this research adopts a research framework capable of compiling insights from current research bodies on blockchain technology. The application of the blockchain framework aims to make it easier for creators to prove what and when their work was made in front of a court or when registering a work copyright. Blockchain can provide solutions in copyright protection and digital copyright management.

Keywords*: Blockchain, HKI, Certificate*

1. Introduction

It is usefully the same as a distributed ledger which is updated and validated by the parties covering all transactions in the network and is consensually stored. Blockchain technology triggers on a fully distributed system to capture and store transaction logs that are fixed, and linear. events between network actors. On a network like this, blockchain technology prioritizes transparency and guarantees ultimately, system-wide agreement on the validity of all transaction history files. So the current blockchain technology is not only able to process monetary transactions and can also ensure that transactions comply with rules that can be programmed in the form of "smart contracts" (Tschorsch and Scheuermann 2016), but also parties who do not fully trust each other to carry out transactions. and check each other's transactions reliably without relying on trusted intermediary services. perhaps this is one answer why almost all banks are currently contributing to developing goals for what this technology means for their business (Glaser 2017) [1] [2].

Figure 1. Copyright application flow

Once digital intellectual property rights take effect, the content industry's main strategy is to combine litigation with the threat of further litigation. They seek, identify, threaten and, if necessary, prosecute intermediaries who can facilitate the unauthorized use of individuals. They use automated programs to search the Internet for signs of infringement to find suspicious sites, and use DMCA speed dial programs to force service providers to identify suspected piracy. In most cases, only threats are needed [3]. The Recording Industry Association has sent countless letters to universities asking for the closure and closure of student websites. The RIAA requires Internet service providers to terminate subscribers, and subscribers are terminated as well.

Long before the DMCA came into effect, the software industry had started selling its products online. In the early 1990s, advertising-supported works (such as newspapers and magazines) spawned online versions. However, the film, music, and book publishing industries are adamant that they will not risk putting their valuable content on the Internet until DMCA protections become law. After the DMCA protection became law, they still refused to make their work available for download, worried that the existing technical protections were not leak-proof [4]. Even after the popularity of MP3.com, Napster, MP3Board, iCraveTV, and Scour demonstrated the growing demand for digital music and television, the recording and film industries were still reluctant to distribute their material via Web licenses. Instead, they carry out related campaigns aimed at education, prevention, and retaliation.

2. Research Method

Using the SWOT analysis method (Strengths, Weaknesses, Opportunities and Threats) to provide more detailed and measurable data. SWOT analysis method to simplify complex problems [5].

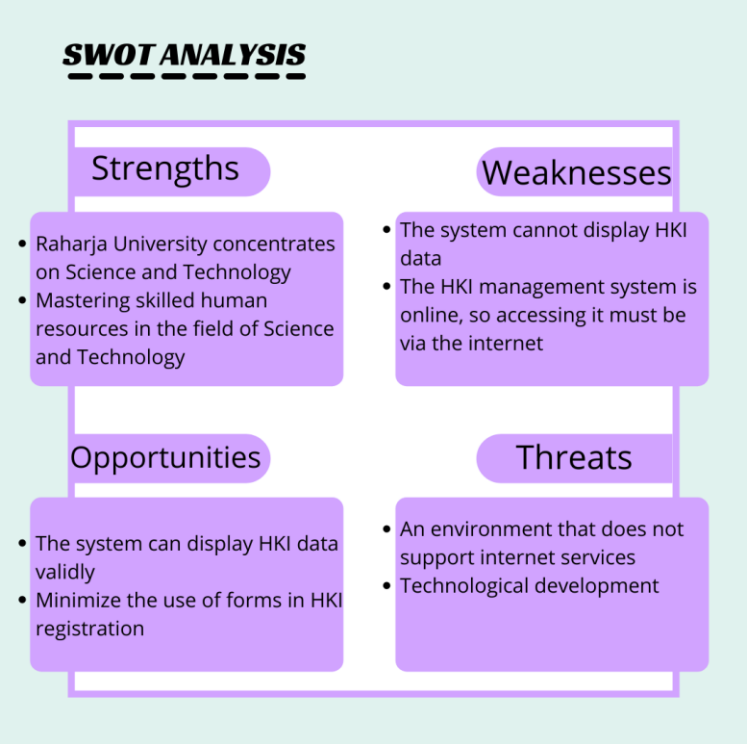

Figure 4. SWOT method

The first quadrant shows advantages, and blockchain technology shows five advantages: (1) visibility, (2) aggregation, (3) verification, (4) automation, (5) flexibility. This is important in the context of blockchain. Some networks don't have permission (everyone can join this public network). There are also models that fall between completely unlicensed networks and fully licensed private networks. For example, different agents may receive different permission levels to read or influence database transactions [6]. An important consequence of decentralization is that temporary database versions may differ from one another. Therefore, the blockchain needs a protocol mechanism to ensure the satisfaction of these different versions. Different blockchain technologies have different ways of achieving this. The nature of the network (eg, public versus private) influences the choice of the agreement mechanism. For public networks, the main issue is to justify that no single actor dominates them. The challenge in this is the challenge of creating technical solutions that balance information, energy resource efficiency, and maximum personal level. Responding to this special need, dozens of protocol conventions have emerged, as well as those that have just emerged in an orderly manner [7].

As discussed above, the novel technology is large distributed fault tolerance. Have found many databases of Blockchain copies, which are integrated through convention mechanisms. this feature shares durability (universal in many applications) as well as greater durability. In us the breadth of this power.

The second quadrant explains that disagreements within the public blockchain community lead to permanent splits, possibly dividing the blockchain into 2 or more. All related parties must be responsible for integrating information. some parties can be very closed to sharing data, but integration is very meaningful and useful. Because Blockchain produces the right information and can be accessed by related parties, interoperability is needed for the needs of people and the public, so something is needed to regulate it [8]. Not only that, Blockchain technology does not damage its records. Often people who act as trusted third parties log data on the Blockchain. In this case, whether it is an unethical business application, someone can easily enter the Blockchain system if the legal business and the perpetrators can be deceived.

The third quadrant represents opportunity, Provide a platform for Big Information and analytical research. Redistributing control to users e.g. Instead of Google and Facebook using your information, you can control who gets access to your information. All these permissions will be put on the blockchain[9]. The world is becoming more digital, so more people want to embrace the blockchain concept in their daily lives.

The fourth quadrant presents the problem, the Scalability problem: too many transactions (overload), although there are some solutions. Undesirable centralization: large mining pools as well as Quantum(future) pc mining which has the expertise to decrypt information. The hype and the area are rapidly changing. There is always a rush of mining, and hacking.

2.1 Literature Review

This research uses a literature review method, this approach is taken considering that there are not many practitioners and implementations of blockchain technology in Indonesia, especially in the archives field. Literature or literature study is a data collection technique using analysis and various sources such as books, literature, reports, and notes so that the necessary data is obtained related to the problem being discussed (Nazir, 2003) [10]. This research uses the basic concepts of blockchain and the basic theory of archival science related to authentication and digital files.

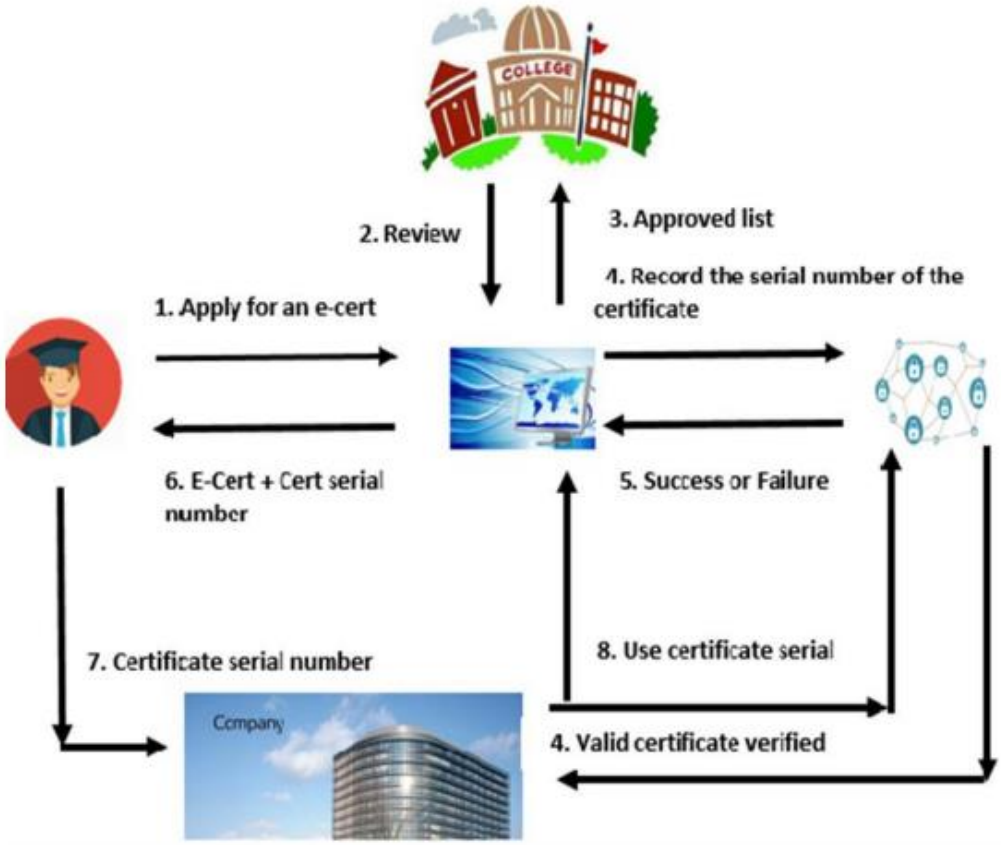

Figure 2. System Process

The use of the terms file and record in this writing leads to moving forward files which are often considered to be "records" in the private sector [7] [11]. So the words archive and record often overlap. The data collection technique used is through documentation in the form of notes, books, journals, newspapers and other written materials related to the topic of discussion. The data analysis technique used is as follows. First, a description to explain a situation, event, object, whether people, or everything related to variables that can be explained

[12]. This research uses descriptive analysis and literature studies. Descriptive analysis is used to present objects about the reality contained in the field under study, a systematic method is used to describe the next object through the data collected will be analyzed in the literature and then will be taken from data according to research needs [13]

3. Results and Discussion

In the era of digitalization, innovative technologies and Data and Communication Technology (ICT) systems have replaced many zones and domains. This can be called a Big Learning, because it involves the immutability of copyright, most of which are still in paper form and require manual and time-consuming processes [14]. Bearing in mind that such documents are related to patent filings in order to facilitate the registration, payment, scheduling, assessment recap, certification results and certificate validation processes. This is based on the presence of Blockchain technology which has the ability to store and manage digital certificates in the public and large documents that cannot be replaced, creating a history log that is entirely traceable and can reduce transaction fees [15] [16] In this research, design and improve the proposed framework so that it is reliable and can be tested for authenticity.

Blockchain technology at the end of this year became a market attraction as one of the interesting technologies to be developed. Blockchain is basically a digital ledger where the stored data is encrypted, distributed and synchronized across the connected network and only the users in the connected network have control [17]. That way the data is not vulnerable to manipulation and leakage. Blockchain is a technology that was introduced together with bitcoin by Satoshi Nakamoto in 2008. Blockchain also records all transactions made by its users. Blockchain technology is a technology that can operate independently and is decentralized, and open records are carried out from computerized events and all transactions will be submitted to the people who participate [18] [19] In order to reveal the authenticity of every transaction on the blockchain, to be verified with a digital signature. The data stored on the blockchain is valid and cannot be changed, due to the user's digital signature and encryption[5]. This innovative technology is implemented in several applications such as the business, health, and education industries. All transactions implemented on the blockchain are secure, transparent, and immutable.

However, there is a problem with data falsification, invalid creation time and other frauds. So legal features in the field of patents are needed to provide legal protection and create a better breakthrough for technological invention activities and facilitate the entry of technology into the country. To expedite this goal, it is necessary to try updating the patent system, including: proper disclosure requirements, exemption requirements for patent exclusive rights, patent license requirements, license requirements for patents, and a patent data service system [20].

So from this problem, the goal of development in the field of intellectual property rights with blockchain technology is to function as a distributed ledger that records and protects digital data through cryptography. Blockchain maintains a decentralized historical record of changes in asset ownership. This technology is often applied to cryptocurrency networks, its decentralized nature and security also makes it a very powerful tool for many other industries [21] [22].

3.1 Home Display on HKI Raharja University

Figure 5. Home Display on HKI Raharja University

In the image above, which first appears when accessing the website which contains the logo and remarks from the chairman of the REC (Raharja Enrichment Centre): https://haki.ilearning.me/ with a simple home display and an easy-to-use interface.

3.1 Display of the Register Menu on HKI Raharja University

Figure 6. Display of the Register Menu on HKI Raharja University

The picture above is a display form for registering on the Raharja University Intellectual Property Rights Website. The form will be entered in the Raharja University HKI email which is held by the Raharja University HKI Operator. From the data that has been obtained from the form, the operator will record it and register it with the DJKI [23]. If the HKI registration is accepted by the Director General of Intellectual Property Rights, a certificate will be given, in the form of a digital certificate that has been registered on the blockchain.

3.2 HKI Valid Electronic Certificate

Figure 7. HKI Valid Electronic Certificate

In addition to valid electronic certificates, applicants can also download and print physical certificates. However, an electronic certificate is basically sufficient. An example of a physical certificate is as below.

4. Conclusion

Protection of Intellectual Property Rights (IPR) in the digital era is very necessary, to deal with the development of internet use in Indonesia. The impact on netiquette (internet etiquette) is no longer sufficient for the rapid development of internet users. More and more businesses are investing on the internet [24] Based on the analysis that has been carried out by the author at Raharja University, it can be drawn some conclusions from the development of the Intellectual Property Rights Management system, namely currently Raharja University is still using a conventional manual system where to get data on intellectual property owners, operators must contact the lecturers one by one by way of call him. By building an Intellectual Property Rights Management System that can run effectively and efficiently and provide convenience for operators in managing intellectual property data. By changing the system that was originally still conventional into a system that runs online that can be accessed anytime and anywhere so that it can facilitate the operator's work. The current existing Intellectual Property Rights Management system still has many shortcomings [25].The tasks undertaken by the operator are numerous. The current system has not been able to register Intellectual Property Rights. So that Raharja who owns the Intellectual Property must register it himself with the DJKI. The suggestions that the author can give as a reference used in improving the existing system so that further research can develop this system to be even better, so that the remaining deficiencies can be overcome by developing an Intellectual Property Rights Management System that is currently running at Raharja University [26].thus minimizing the shortcomings that exist in the current system. In addition, it is necessary to hold socialization especially to Raharja's person so that Raharja's person can know the intellectual property rights management system that will be implemented later. And finally, there needs to be a change in the Intellectual Property Rights Management System that is currently running [27] [28] Like changing the way that was manual to be computerized. From a conventional system to online using the internet network. So that it can be accessed anytime and anywhere by Pribadi Raharja.

The achievement of HKI is very satisfying at PTKIN, it needs to be expanded further so that HKI is in the scope of patents, brands, industrial designs, integrated circuit layout designs, trade secrets and geographical indications [29] Instead of that, the establishment of an HKI/patent center within PTKIN is considered quite urgent and at the same time the regulations for its arrangement make it easier for a more ideal management.

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