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**The Notions of Blockchain and Smart Contract from the Point of view of
the Intellectual Property Right**

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Abstract: The paper proposes a legal definition of the notions of blockchain and smart contract from the point of view of the intellectual property right. Therefore, this research brings to light the effects of new technology on the positive law and, above all, on the notion of contract. By applying the blockchain technique, the parties optimize costs and significantly reduce the time needed to produce legal effects, particularly by eliminating third parties. However, this technique creates a real series of legal issues that already give jurists the opportunity to develop new theories of law by finding solutions to them.

Keywords: blockchain; smart contract; intellectual property right

Introduction

In evolution, the human being sought as far as possible to find ways to facilitate their existence. That began to create, currently to be dependent on technology that - you have to admit, it is an integral part of our daily lives.

Undoubtedly, accuracy and speed of computer systems, the programming language created by human genius, leading to exponential growth of society as a whole.

Creations and inventions have impacted so important to man, that he felt the need to protect the essential means, both legal involving coercive force of the state and with technology, which has led to the definition networks chains data and intelligent contracts, in addition to many other technological means of protection.

Considering the above, we proposed below, to perform a **first tempo** analysis of what blockchain site and smart contracts, ducking us on the general aspects and in a **second tempo** to present their application, as they relate to intellectual property rights and other key areas of society.

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1. General Aspects of Blockchain Technology and Smart-Contracts

1.1. Harnessing Technology Fundamentals Chain Data

1.1.1. The Concept and Origin of Blockchain

Data chains are essentially electronic registries that facilitate recording of transactions and the tracing of property in the commercial agreements between the parties. Noteworthy is the fact that access to such records is strictly controlled by parties to the transaction, and it can be distributed to any third parties, only by those who have completed their agreement will, under that blockchain.

Transactions through data chains are using crypto-currencies. Of these methods, undoubtedly the best known and publicized monetary unit virtual is Bitcoin site - money that has been created based and technology blockchain, the latter having a role registry to track and operations using Bitcoin's .

1.1.2. The Shortcomings of the Current Trading System and the Benefits of using Blockchain Technology

Classical methods to record transactions and to track goods from the manufacturer to the supplier and the consumer then has a number of shortcomings. Those involved in these procedures are forced to create their own registers in which to record information on traded goods, their price, features, areas in which they must be transported, etc.

This method of trading is quite costly, as all these intermediate operations registration, checks etc. involving staff or intermediaries - hence, create new contracts that will involve expenses themselves.

The inefficiency of traditional methods nuanced issues arising out of the delay in carrying out the contract in efforts to secure the multiple copy of all data records for all parties involved in the transaction.

Using technology chain data - to establish a commercial contract is a method involving efficiency and very low cost because it eliminated bureaucracy (records in multiple copies) and there is no need to resort to intermediaries for transactions, which are included in electronic registers directly by the parties to the contract/transaction

1.1.3. Building Confidence through Data Chains

“Confidence in the technology blockchain” presents as advantages of the following: reduced time of the transactions, reducing costs, advanced network security, enhanced privacy, audit efficiency, increased operational efficiency.

Increased safety and trust among participants in transactions on blockchain is obvious because every transaction is inextricably linked to another transaction correlative, and any attempt to commit an act of corruption is immediately noticed by all participants, is highlighted and shared in registers (shared ledgers).

Building confidence through chain data is based on a number of *fundamental attributes*: sustainable and shared, secure, private and indelibly, transparent and verifiable, based on the agreement of will and transactional synchronized and flexible.

1.1.4. How Does the Blockchain Work

Within blockchain platforms, data transactions are stored in data blocks that are linked together by operations and form a virtual chain. The number of transactions increases, will increase proportionately and data chain (not rewrite input than existing ones).

Data blocks, records and confirm the date and sequence of transactions that are entered in the data chain, the latter being governed by rules established by consensus. Each data block contains a fingerprint reader/unique identifier containing both date and subject to valid transactions and fingerprint (brand) on previously block.

Conceptele cheie utilizate în tehnologia blockchain sunt: registrele partajate, autorizarea, consensul, contractele inteligente. Scopul SMART-CONTRACTELOR este acela de a conferi o securitate sporită, de a reduce costurile și întârzierile asociate cu contractele tradiționale/ *Blockchain key concepts* used in technology are shared ledgers, authorization, consent, smart contracts. SMART-Contracts goal is to provide better security, reduce costs and delays associated with traditional contracts.

1.2. What Are Smart-Contracts?

1.2.1. The Concept of SMART-CONTRACT

Smart-contract is a computer program that adds information in digital transactions that are executed in a chain of data. This allows more complex transactions than simple exchange of crypto-currency for a product or service.

1.2.2. Smart-Contracts Advantages

Following examination of the blockchain platforms and how they can be used with smart-contracts, we can mention the *following advantages*: autonomy, trust, records backup, safety, speed, cost reduction, precision.

1.2.3. Disadvantages and Problems Identified in the SMART-CONTRACTS

Disadvantages and *problems* encountered within smart-contracts are:

- users are quite reluctant, suspicious about applications of this type of contract in terms of its safety, are quite difficult to understand the operation without engineering knowledge of programming languages;
- making last-minute changes;
- storing and saving data through intelligent and blockchain contracts are safe and free of any distortion, as long as the code (programming language) is written precisely and perfectly;
- third parties involved in smart-contracts will not disappear completely, but their role will be entirely new.

1.2.4. The Future of Smart-Contracts and its Applicability in the Field of Intellectual Property

Discussing about smart contracts to totally replace traditional contracts, creates an impossible scenario. We appreciate that the next step for their implementation, is the application of a *hybrid contract* that combines traditional and smart contract being checked and secured and tested blockchain/legal utilizat by Hard copies.

Ii. Blockchain Technology and Smart Contract in Terms of the Intellectual Property Law Rules

2.1. Legal Analysis of the Data Chain Technology and Smart-Contracts Related to the Copyright and Industrial Property Rights

2.1.1. The Object of Copyright and Industrial Property Rights in the Smart-Contracts

The object of copyright is represented by the copyrighted literary, artistic and scientific. These works enjoy legal protection from the moment of their creation. Authors can choose to protect their works individually or to apply to the **Romanian Copyright Office**.

At this point, enter stage blockchain technology and smart contracts. The authors could register work as soon as it begins to be created in blockchain platform, performed by ORDA, without wasting time and incur expenditures intermediaries for factual record by submitting applications. By accessing chains data, ORDA, producers, publishers, media companies could negotiate and contract directly with authors by requesting permission to access blockchain's created them, these negotiations finding and purpose as concluding a contract clever directly copyright beneficiary under the supervision of the government. In this way, consumers can pay for the products directly to the copyright owner.

Subject matter of industrial property consists of actual industrial creations (inventions) and hallmarks. Legal protection of industrial property right arises on application by the inventor to patent his invention or for registration of the mark. On application to the **State Office for Inventions and Trademarks** and its registration in the **Official Bulletin of Industrial Property**, is born a priority right for the inventor and the patent itself the invention materializes after plans invention are analyzed by special committees.

If industrial property rights, more useful would be enforcing contracts hybrid is to create a chain of data recording applications, permits and plans in OBIP and after obtaining the patent, companies or individuals who hold the title of patent use agreements traditional to exploit their inventions or creating intelligent contracts with beneficiaries or consumers, depending on the activity, thus developing their own blockchain sites.

2.1.2. Enforcement of Intellectual Property Law Principles through Smart Contracts

Because blockchain technology and intelligent features can work contracts in this area, they will have to comply with the four fundamental principles of intellectual property law:

- national treatment – this principle give the holders of intellectual property rights, which obtained those rights in the country of origin to benefit from them in all EU countries;
- priority right – this right is the privilege of a person who has filed a patent application and created a legal deposit (to submit all documentation to obtain patent/register a mark) in a European Union country to have priority you are patented invention to any person who meets the same procedures, the same invention, then the privileged in any Union country;
- independence of patents and marks – this principle confers independence of each patent/trademark in every European Union country.

2.1.3. Issues Concerning Intellectual Property Rights on Blockchain Platforms and Smart Contracts

Specifically, data platforms chains are registers used by companies/institutions/individuals to record transactions and smart contracts, under which they were made. *Participants* in a data network chains

are: users, the observer, the developer network, data network operator chains, traditional processing platforms, traditional data sources, authority certificates.

I do not think it will put the issue of copyright or industrial property rights on smart contracts, since the latter produces effects exactly traditional contracts. They also help strengthen the legal protection of these rights and contracts are encumbered intelligent and clauses relating to the legal effect that the parties wish to produce.

2.2. The Potential of Blockchain and Smart-Contracts - Use Cases

2.2.1. Intellectual Property Law Domain

Regarding the applicability of intelligent platforms blockchain and contracts, there are two situations: **copyright in an artistic work (music)** and **industrial property rights of a new brand of car (innovative)**.

2.2.2. Trade Domain

In the process of moving goods across state borders, authorization is required from numerous institutions (customs, port authorities, shippers). By blockchain, these permits are electronically signed and visible to all, saving time and resources.

2.2.3. Insurance Domain

Insurers need an efficient method for compensating customers and a way to check the accomplishment of the incident, whose risk is insured. Automated procedure for compensation and insurance conditions are recorded in a smart-contract, stored on blockchain. When an event occurs announced (organ police report, weather events, etc.), the insurance policy is automatically enforced and compensation calculated under the terms entered in the smart-contract, the customer is paid in a very short time.

2.2.4. Health Domain

Healthcare industry needs a reliable and efficient system to manage medical records to make payments to hospitals, to determine the amount of compensation payable by insurance policies life / health and record other complex transactions (purchase of medical equipment). Currently, registration is done by creating medical records databases and access is allowed only to those hospitals that provide health services. Centralize costly, inefficient and vulnerable to security breaches.

Sistemul blockchain și smart-contractele oferă sistemului de sănătate, atât garanția, cât și rapiditatea, atât de necesare. Prin platformele blockchain, se poate menționa pentru fiecare pacient în parte întreg istoricul medical, cu multiple posibilități de modificare/vizualizare de către pacient, medici, asiguratorii, spitale etc, oferind în același timp un mecanism sigur de înregistrare/The smart -contracts and blockchain provides to the healthcare system, both security and speed, as required. By platforms blockchain may be mentioned for each patient throughout medical history, with multiple modification/viewing by patients, physicians, insurers, hospitals etc., while providing a secure mechanism for registration.

Conclusions

Summarizing the analysis in this paper, the chains data networks and smart contracts, we see ways gradually blockchain company will use technology - as complementary or even to replace existing traditional contracts.

We consider appropriate *legislation regulating the procedures* for creating platforms blockchain type public institutions to give citizens confidence in this type of recording system and emphasizes efficiency.

In conclusion, we consider the application of a hybrid contract, a combination of contract law traditionally regulated its forms in the Civil Code and registered in the shared ledgers, created through government institutions to try reducing tax evasion, moonlighting for to be able to track goods from the civil circuit and to be able to just settle any disputes between the parties to a contract or between state and citizens.

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