Legal Control Over Copyright Protection Using Blockchain Technology

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Abstract: The development of digital information technologies predetermined the need to develop technical and legal mechanisms of copyright protection. Now the share of copyright in the national economies of most countries is very significant and continues to grow, the main task of national legal systems is to find and implement technical and legal solutions to protect copyright from digital piracy. One of these solutions is block chain technology. The relevance of the research topic rests at the novelty of this technology and the lack of study of issues in the field of theory and law enforcement related to the adaptation and legitimation of relations using block chain technologies, including in the field of copyright protection. The purpose of this article is to analyze the legal qualifications of block chain technology and its application in the field of copyright protection, legitimization of relations associated with the use of block chain technologies in the field of copyright protection. The study revealed that the block chain has features that allow for classification of this technology as a type of technical means of copyright protection, which is the theoretical significance of this study. It has been established that in the field of copyright protection, the block chain performs the function of fixing and confirming the legitimacy of ownership by the author or other right holder of the corresponding work, and provides control over access to the work during authorized use. In the course of the study, the authors assessed the provisions of the current procedural legislation for the use of block chain technologies as evidence in court proceedings for copyright protection and revealed that information from the block chain, including those confirming authorship, can be recognized by the courts as evidence.

Keywords: Copyright, technical means of copyright protection, block chain, intellectual rights, intellectual property right, civil right, software, databases.

INTRODUCTION

The rapid development of information technologies and the digitalization of society make the author, who wrote an article, a book, a story, performed a piece of music or its modified version, processed in a qualitatively different way, as well as the copyright holder of video materials, unprotected. The point is that such materials get into the Internet and other information resources without the copyright holder knowing about it and are being distributed among users for free. As a result, the author is deprived, to say the least, of his right to benefit financially from the intellectual property created by him. These circumstances question the relevance of the issue of copyright protection and the need to develop and apply appropriate mechanisms, methods and means. One of them that have been widely used is the block chain technology. The present paper discusses the legal issues of copyright protection with the help of this technology, in particular, the issues of the legal qualification of the block chain technology and its application in the sphere of copyright protection, legitimization of relations associated with the use of block chain technology in the sphere of copyright protection.

METHODOLOGY

The authors, based on the use of formal-legal, comparative-legal, formal-logical and structural-functional methods, conducted a study on the legal regulation of copyright protection using block chain technology.

RESULTS

Copyright protection in legal science means a set of measures aimed at restoring (recognizing) infringed (contested) copyright, protecting the interests of the copyright holders and influencing the offender through applying legally established sanctions.

The measures taken within the framework of copyright protection can be conventionally divided into legal and technical.

Technical measures of copyright protection include technical means. They are referred to with an acronym DRM (Digital rights (or restrictions) management) and are in fact hardware or software tools that render difficult or limit any operations with electronic data or help trace them (Andersen *et al.*, 2020). Operations with electronic data include viewing, copying, modifying

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and so on. The main criterion is the illegal nature of such actions, which is an absence of consent of the creator of the intellectual property to use and distribute, benefiting from selling it.

One finds a rather succinct definition of technical protection means in Clause 1 of Article 1299 of the Civil Code of the Russian Federation. It includes technical devices, technologies and their components, the purpose of which is to control access to taking, preventing or limiting such actions, as well as to record copyright violations.

Technical means of protection are, as regarded by N. Kuzina and E. Strauning, the means that help to carry out copyright protection, i.e. certain tools (Kuzina & Strauning, 2013). According to I. Svechnikova, technical means of protection is a software or hardware that creates obstacles for the illegal copying of the results of intellectual property (when distributed in electronic form) (Svechnikova, 2009).

In the context of copyright protection with technical means, the use of such widely discussed technology as block chain is to be considered.

However, before turning to the issue of applying block chain technology in the sphere of copyright protection, it should be determined what this technology is about.

From the technical viewpoint, the operation principle of the block chain technology is complex enough to understand, so in terms of legal regulation of its application for copyright protection we will dwell on its general characteristics.

Block chain is a continuous chain of blocks built by certain rules. These blocks contain information about all the transactions carried out by the participants (users) of the system relating to the certain object. The blocks are connected with each other, and each block contains all the information about the previous one. Block chain technology possesses versatility, which allows it to be used for building various databases (Mhana *et al*., 2019).

The characteristic features of the block chain technology include:

1. Decentralization

The absence of one main server on which data is stored. All information is stored by each user of the system.

2. Transparency

Each user has access to information and can track all transactions in relation to the corresponding object.

3. Reliability

It is impossible to make changes to the data of the block chain “post factum”. Any unauthorized attempt to make changes will be rejected by the system due to inconsistency of the data stored in the previous blocks.

The above listed technical features of the block chain technology allows for the conclusion that the very work of the system and the actions of all its users (participants) are under public control, which certainly enhances its efficiency and security, as well as the level of users' trust.

There are also varieties of block chains; the main types are public and private (Buterin, 2015).

A public block chain does not imply any restrictions on access to the system: every person has the opportunity to join it (by installing the appropriate software) and make the appropriate transactions. All public block chain users have equal rights of access to its information, as there is no administrator or operator of the system with special rights, for example, to change data. A classic example of such block chain is the Bitcoin digital currency.

A private block chain is a closed information system, with access being regulated by a certain person (administrator), who distributes the rights to access and make changes to the block chain data among the participants. A private block chain can be created within a separate organization or a consortium of organizations and adapted to their needs (Savelyev, 2017).

Block chain technology is usually also embodied by means of so-called smart contracts, which are event-driven programs operating on a distributed, decentralized, collectively used and replicated register and controlling the assets and transfer of assets in this register (Ruzakova & Grin, 2017).

At present, the technology of block chains is used, as a rule, in the financial sphere. However, the system of distributed register maintenance can be used in different spheres. In particular, this technology can be used in the formation of distributed registers of rights, including real estate register, transport register, in the

notarial system, voting, document management, information exchange, smart contract services, security (Bulgakova, 2016).

A. Savelyev, taking the floor at the 7th International Legal Forum in St. Petersburg at the session "Traditional system of law in the era of distributed registers technology: catalyst of progress or transaction costs?" noted that block chain perfectly fits into the context of intellectual property protection. In his opinion, when using the block chain technology the fact of right ownership with a specific date is recorded, which creates a register of rights, and fixes the fact of the time of granting the right to use a specific object, for example, a song, a copy of the software. Moreover, the use of smart contract allows having the processes of conclusion and execution automatized: "It is actually possible to get a free license, which, like Creative Commons, will be easily used on the Internet. Yet it will also allow you to earn money in the form of crypto-currency" (Saveliev, 2017).

In this regard, it is necessary to answer the question, whether the block chain technology can be regarded as a technical means of copyright protection.

A technical means of copyright protection, despite the absence of a special reference in the current Russian legislation, can also be a piece of software for an electronic computer.

Copyright protection presupposes the necessity to adapt the block chain technology to the relevant goals and needs, which, in its turn, determines the necessity to modify the program code or create a new one.

The software code created as a part of the block chain project, regardless of whether it is a certain module of a more general software solution or a software code of a smart contract can be considered, from the standpoint of the current legislation, as a computer program (Savelyev, 2017).

According to article 1261 of the Civil Code of the Russian Federation, a computer program is a set of data and commands intended for the functioning of a computer and other computer devices to obtain a certain result, including preparatory materials obtained during the development of a computer program and the audio-visual images generated by it.

Accordingly, as well as for other technical means of copyright protection realized in the form of computer programs, the legal regime also proper for computer programs, in particular, the possibility of its registration (Article 1262 of the Civil Code of the Russian Federation), commercialization and protection in accordance with the established procedure (1301 of the Civil Code of the Russian Federation) is applied to the software code created for the corresponding block chain project (Savelyev, 2017).

In this regard, it should be noted that the product created based on block chain technology, as well as other technical means of protection, implemented in the form of computer programs, has a dual legal status, since it is aimed not only at protecting copyrights, but is also their object.

As for technical protection means realized in the form of computer programs, it generates a kind of recursion: the information characterizing the technical means itself can also become an object of illegal disposal by unauthorized persons. It means that if you "hack" information about the security device itself, you can get information that is protected by such means. In other words, as E. Petrov rightly notes, there is a problem of using technical means of protection for technical means of protection (Petrov, 2013).

However, in respect of the product created based on block chain technology, such a problem can be solved using its technical features, which consist in the impossibility of making changes to the block chain data "post factum", as any unauthorized attempt to make changes will be rejected by the system due to inconsistency of the data stored in the previous blocks.

At the same time, as has already been noted, a product implemented based on block chain technology, in addition to the program code, also assumes the presence of an appropriate database on transactions.

Under Clause 2, Article 1260 of the Civil Code of the Russian Federation, the database is a set of independent materials (articles, calculations, regulations, court decisions and other similar materials) presented in an objective form, systematized in such a way that these materials can be found and processed with the help of an electronic computer.

Therefore, the database itself, rather than its content (information or materials), is protected in terms of copyright.

Thus, if the criteria established by law are met, the database may be subject to the legal protection provided for the database.

In this regard, a product created based on block chain technology, as well as a technical means of protection, in some cases can be a complex object of intellectual rights, which includes several components.

The combination of these factors allows us to conclude that a product created based on block chain technology in order to protect copyright can be attributed to the technical means of protection provided for in Article 1299 of the Civil Code of the Russian Federation.

With this in mind, one should consider how block chain technologies could protect copyrights.

From a technical point of view, the use of block chain technology for copyright protection is as follows. A user (an author) who wishes to protect his rights to the created copyright object places the work in the appropriate register created based on block chain technology. Because of this placement, the downloaded work is hashed, i.e. a unique digest of the downloaded file is created. Such a hash cannot be changed by anyone and contains time tags with information about the exact time of creation or publication of the copyright object.

Even though Russian legislation does not force authors to register copyright, adding your piece of work into the appropriate decentralized register created based on the block chain is a means of protecting the copyright when this piece of work is used by third parties. With the help of the block chain, copyright holders can create digital copies of their works, as well as establish methods and types of their use. For example, the author introduces a restriction that does not allow downloading the piece of work to a user's personal computer, leaving it available only online.

The fact that block chain contains the information on the status of the copyright object and the limits of permitted use allows each user anywhere in the world to get all the necessary information about the work, including information about the ownership of the right to the piece of work, the possibility of using it (how and to what extent).

With the help of block chain technology, the author gets the opportunity to track quickly who, when and how used his work.

Thus, the placement of a work in a decentralized register (block chain) simplifies greatly the procedure of marking the authorship in comparison with the generally accepted procedure of depositing works.

Therefore, the main function of block chain technology in the sphere of copyright protection is to fix and confirm the legitimacy of possession of the corresponding work by the author or other copyright holder.

To date, block chain technologies in the sphere of copyright are already being used. For example, recently the “Unified Depository of Intellectual Activity Results” (EDRID) for the first time registered copyright through the block chain. The Skolkovo Foundation, in collaboration with WIPO and other partners, set the IPChain Association, which announced the creation of the IPhub platform for authors and owners to place works and specify the conditions for their use.

As already noted, technical means of copyright protection perform the functions of controlling access to a work, preventing or restricting such actions, as well as fixing copyright infringements. In this context, a product created based on block chain technology, apart from recording and confirming copyrights, performs only one of these functions, providing the author or other copyright holder with access control to the work only when its use is authorized.

Meanwhile, it should be noted that block chain technologies do not solve the problem of unauthorized distribution of the copyright object (piracy), because this technology does not provide the author with control over the subsequent copying of an object of copyright and the subsequent distribution of the work by third parties.

Thus, if an unauthorized distribution of a work contained in a decentralized register based on a block chain is established, the author or other copyright holder is entitled to apply legal protection measures provided by law. In this case, the application of legal protection measures is mediated through the initial use of technical measures in the form of products on the block chain. This brings up the question of whether the information contained in the block chain is available as evidence for procedural law.

A. Savelyev, considering this issue, notes that problems with the availability of the information contained in the block chain should not arise, because such information can be considered as an electronic document signed with an enhanced encrypted non-certified digital signature (Savelyev, 2017).

Therefore, the information contained in the block chain, including the information about the ownership of the copyright object, can be used as evidence, which is provided for in Article 71 of the Civil Procedure Code of the Russian Federation, as well as in Article 75 of the Arbitration Procedure Law of the Russian Federation.

Yet A. Savelyev also points to the possibility of applying Article 89 of the Arbitration Procedure Code of the Russian Federation, which says that other documents and materials are allowed as evidence if they contain information about circumstances relevant to the proper consideration of the case.

To date, in judicial practice in the context of copyright protection there are no instances, when the court recognized an electronic document containing information from the block chain as evidence. Nevertheless, the Arbitration Court of the Omsk Region examined the first case in Russian judicial practice (A46-4990 / 2019), wherein the matter of dispute was an obligation under a block chain contract. When considering the dispute, the court accepted as evidence the addendum to the contract on the supply of petroleum products in the form of an electronic document (block chain contract). Therefore, there is reason to believe that the courts will be gradually accepting information from the block chain as an electronic document as valid evidence.

However, in addition to the requirements for determining the admissibility of evidence, procedural legislation indicates the reliability of the information that is the content of such evidence.

The provisions of the arbitration and civil legislation of the Russian Federation determine the evidence to be reliable if, because of its verification and research, it is established that the information contained in it is true.

In this case, there is a problem of interpreting the information contained in the block chain, because such information is a set of numbers and technical terms that can be described and interpreted in the most understandable language only by specialists in the field of information technology. This state of affairs makes the process of verification and investigation of such evidence difficult during the trial.

Thus, the interpretation of the information contained in the block chain requires special technical knowledge, which, under procedural legislation, determines the necessity for the court to appoint a special technical (computer) examination. In this case, the task of such an examination is not only the interpretation of information, but also, in fact, verification of information for any unauthorized changes, as although block chain technology is resistant to such changes, special technical knowledge is also required to evaluate this fact.

At the same time, the problem of recognition of information from the block chain, for example, about the authorship of a work, is complicated by the fact that the issue of the legal status of registry operators that contain information and their responsibility for the accuracy of the information contained in the registries is currently unclear.

In this regard, the introduction of certain presumptions would be appropriate. So, A. Savelyev calls on the foreign experience in establishing such presumptions (Savelyev, 2017). In particular, information verified as part of a reliable implementation of block chain technology is recognized as an authentic copy of the original information sent to the block chain; the date and time of the transaction are considered the date and time indicated on the block chain; the person indicated on the block chain as the person who completed the transaction is presumed to be such until proven otherwise (Condos *et al*., 2016).

Nevertheless, despite the high technical security of the information contained in the block chain, A. Savelyev rightly notes that when developing the appropriate presumptions, one should not go into extremes and absolutize the reliability of the information in the block chain, because the reliability of the information may be distorted even at the stage of its entry into the block chain, and therefore he comes to the reasonable conclusion that ensuring the necessary accuracy of data in the block chain at all stages of its processing, including the input stage, requires the additional implementation of the off-chain mechanism, and thereby increase transaction costs (Savelyev, 2017).

Thus, information from the block chain, including the information that confirms authorship, can be recognized by the courts as evidence, although such recognition and the conservatism of the judicial system as a whole impose additional requirements on this evidence and require strict observance.

CONCLUSIONS

Analysis of the use of block chain technology from the legal point of view allows us to conclude that this

technology is an efficient technical measure for copyright protection. At the same time, the study of the nature and the content of block chain technology show that it can be regarded as a technical means of copyright protection. The main function of block chain technology in the sphere of copyright protection is to mark and confirm the authorship of the work, as well as to ensure control over access to the work with authorized use. However, to date, the block chain does not solve the problem of unauthorized distribution of the copyright object (piracy). The current Russian legislation, including the procedural one, is generally adapted to the use of block chain technology as a means of copyright protection, but it may require direct action standards for the most effective use and free adoption by the courts.

REFERENCES

Andersen R. Security Engineering. Chapter 22. Copyright and DRM. Retrieved from http://www.cl.cam.ac.uk/~rja14/Papers/SEv2-c22.pdf

Andreyev, Yu. (2010). Civil Protection Mechanism. Moscow.

Bulgakova, I. (2016). Legal issues of using block chain technology.

Buterin V. (2015). On Public and Private Blockchains, Ethereum Blog, 7. Retrieved from https://blog.ethereum.org/2015/08/07/on-public-and-private-blockchains/

Christopher Millard. (2018). Blockchain and law: Incompatible codes? Computer Law & Security Review, 843-846. https://doi.org/10.1016/j.clsr.2018.06.006

Condos J., Sorrell W.H., Donegan S.L. (2016). Blockchain technology: opportunity and risks. Vermont, Appendix B.P. 25. Retrieved from http://legislature.vermont.gov/assets/Legislative-Reports/blockchain-technology-report-final.pdf

Galakhanova, A., Lovtsov, D. (2011). Intellectual Property Protection in the Internet. Retrieved from http://base.consultant.ru/cons/cgi/online.cgi?SORTTYPE=0&BASENODE=1580087722-428837777&req=query&base=CJI&div=CMT&opt=1&cacheid=B8412DB2C5B958A3D8A13F98538A6289&dirRefFld=65534%2C18%2C182110&n=59124&rnd=210680.9337099564743043

Gavrilov, E., Yeremenko V. (2009). Commentary to the fourth part of the Civil Code of the Russian Federation. Moscow.

Gönenç Gürkaynak, İlay Yılmaz, Burak Yeşilaltay, Berk Bengi. (2018). Intellectual property law and practice in the blockchain realm, Computer Law & Security Review, 847-862. https://doi.org/10.1016/j.clsr.2018.05.027

Kozubenko, Yu. (2009). Copyright protection for computer programs in criminal, administrative and civil proceedings.

Kulikov-Kostyshko, F. (2005). Technical means of protecting copyright works. Retrieved from http://www.aselibrary.ru/datadocs/doc_321no.pdf

Kuzina, N., Strauning, E. (2013). On approaches to determining the system of advertising legislation in Russia and Spain. Retrieved from http://base.consultant.ru/cons/cgi/online.cgi?req=doc&base=CJI&n=76089&dst=0&div=CMT&mb=&BASENODE=1580087722-428837777&SORTTYPE=0&rnd=210680.143829924&opt=1&REFTYPE=CDLT_CHILDLESS_CONTENTS_ITEM_MAIN_BACKREFS&REFBASE=LAW&REFDOC=182110&REFDST=100495%2c0&REFPAGE=0&dirRefFld=65534%2c18%2c182110

Lopatin, V., Doroshkov, V., Intellectual property protection. Actual problems of theory and practice. Retrieved from http://vs-ra.org/library/%D0%9B%D0%BE%D0%BF%D0%B0%D1%82%D0%B8%D0%BD%C2%A0%D0%92.%D0%9D.,%20%D0%94%D0%BE%D1%80%D0%BE%D1%88%D0%BA%D0%BE%D0%B2%C2%A0%D0%92.%D0%92.%20%D0%97%D0%B0%D1%89%D0%B8%D1%82%D0%B0%20%D0%B8%D0%BD%D1%82%D0%B5%D0%BB%D0%BB%D0%B5%D0%BA%D1%82%D1%83%D0%B0%D0%BB%D1%8C%D0%BD%D0%BE%D0%B9%20%D1%81%D0%BE%D0%B1%D1%81%D1%82%D0%B2%D0%B5%D0%BD%D0%BD%D0%BE%D1%81%D1%82%D0%B8.%20%D0%90.pdf

Mhana, A., Mohammed, G.N., Jabor, F.K. (2019). Enhancing Privacy and Improving Security in Scalable Blockchain. Journal of Southwest Jiaotong University, 54(5). https://doi.org/10.35741/issn.0258-2724.54.5.7

Neiman, L., Kolokolov, N. (2007). DRM Legal Basis in Russia. Retrieved from http://broadcasting.ru/articles2/Regandstan/pravovye_osnovy_drm_v_rossi/

Oreshin, Ye. (2015). Effective ways to protect copyright and related rights on the Internet. Retrieved from http://ipcmagazine.ru/legal-issues/effective-ways-of-protection-of-copyright-and-related-rights-on-the-internet

Petrov, Ye. (2013). Organizational and legal problems that prevent counteraction to violations in the field of intellectual property. Retrieved from http://base.consultant.ru/cons/cgi/online.cgi?req=doc&base=CJI&n=75394&dst=0&div=CMT&mb=&BASENODE=1580087722-428837777&SORTTYPE=0&rnd=210680.56955694&opt=1&REFTYPE=CDLT_CHILDLESS_CONTENTS_ITEM_MAIN_BACKREFS&REFBASE=LAW&REFDOC=182110&REFDST=100495%2c0&REFPAGE=0&dirRefFld=65534%2c18%2c182110

Ruzakova, O., Grin, E. (2017). Applying blockchain to the systematization of the intellectual products, *Perm University Bulletin*.

Savelyev, A.I. (2017). Some legal aspects of the use of smart contracts and blockchain technologies in Russian law.

Savelyev, A.I. The presentation at the 7th International Legal Forum in St. Petersburg at the session “Traditional system of law in the era of distributed registers technology: catalyst of progress or transaction costs?” Retrieved from http://www.spblegalforum.com/ru/news/20170519_blockchain

Sergeyev, A. (2003). Intellectual Property Law in the Russian Federation. Moscow.

Svechnikova, I. (2009). Copyright: a Comprehensive Tutorial. Moscow.

Vershinin, A. (2000). Choosing a way to protect civil rights. Saint-Petersburg.