

BLOCKCHAIN TECHNOLOGY SECURITY

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Annotation: this article examines the pros and cons of Blockchain software security, technology.

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Blockchain is a database similar to interlocking blocks. A feature of such a database is that the data storage device is not connected to a shared server. At the same time, the amount of data, and therefore the number of blocks, is constantly growing. Each entry has a timestamp and a link to the previous entry (block). The data is encrypted to ensure security. Access to a particular block is obtained only by a user who has the private key of the block, in which case it is impossible to write to the file. Blockchain technology is famous for being the basis of Bitcoin, but there are other ways to use Blockchain without thinking about cryptocurrencies. This technology can be thought of as an updated book, available to every participant in the event. Any event can be recorded in this book - from financial transactions to apartment sales records. Blockchain is one of the fastest growing technologies. This solves the two biggest problems associated with digital information transactions: control and duplication. Blockchain uses Elliptic Curve Cryptography (ECC), a public key system based on finding numbers on an elliptic curve. Data security is guaranteed by storing (multiplying) them distributed across a worldwide network of computers rather than on a single local server. All entries in the accounting book cannot be changed - even database operators cannot do this if a consensus is not reached between the participants in the transaction. Blockchain can protect any block of encrypted documents linked in chronological or transactional order. The Blockchain register may

also include real estate, mining rights, rights to vehicles, artwork, jewelry, and other objects. Even if each block is cryptographically protected, the shared network may still be compromised. Experts say that in the event of a "violation", attackers will have access to a large number of blocks. Theoretically, this can be done if you get more than half of the confirming resources of the Blockchain network. In this case, a separate chain of blocks is created, which becomes the main one and cancels the operations of old blocks. Solving this problem can be a multi-level security system, but this approach contradicts the basic principle of blockchain, which is a reliable space that does not have a single center and regulatory bodies. Against the background of such considerations, Blockchain technology does not look like a necessity. It should only be used to carry out schemes with a large number of operations and actors. If the organization has a small database, there is no need to apply blockchain. The most obvious and obvious advantage of Blockchain technology is any when performing an operation or transaction, it is to get rid of many "intermediaries". This can not only simplify the process, but also make it cheaper. At the same time, the technology provides sufficient security both for individual blocks and for the network itself, since it does not have a single center and is not controlled from the outside[3-4]. Each block with cryptographic protection can only be changed after providing a private key, which is actually a financial value. Among the disadvantages of Blockchain, it can be noted that it is impossible to apply it in transactions directly related to legal intervention. In addition, Blockchain currently cannot provide the number of transactions of advanced payment systems.

The main features of Blockchain technology are as follows:

- The system is decentralized - in this case, no central organization controls the system and it does not need to be available for the system to work;
- Data transparency is provided in the system and the implementation of the audit there is a possibility - a complete copy of each transaction (transaction) made in the system since its creation is stored in the form of a sequence of blocks and is open to all participants in the system;

- The system stores data in a distributed state – each node of the network holds a blockchain copy which prevents the sole organization from owning the data;
- The system has a decentralized consensus - transactions are central it is checked not by the organization, but by all nodes of the network. This is much safer than the centralized consensus paradigm;
- System safe-blockchain protected from intruders and cyber the chances of criminals to break the system are almost zero.

Blockchain was originally used to register financial transactions, in which all transactions are encrypted and stored by all participants (for example, in Bitcoin and other cryptocurrency systems). Thus, all operations are transparent and any modifications can be easily observed and detected.

The advantages of blockchain are the transparency of transactions, as well as the storage of copies of blocks in many nodes, which allows all participants in the process to receive information about the actions of partners gives and makes the system reliable. From these possibilities of blockchain to each other use in the creation of reliable systems between unreliable tamons can[1]. Blockchain is being introduced astasekin not only in all areas of business, but also in the field of education, since the interaction between business and science is innovative makes a significant contribution to the production of products. Digital economy its development is inextricably linked with the development of the knowledge economy. Knowledge the economy is based on intangible production and growth is driven by knowledge and people with this knowledge. We will consider only one of the possible areas of application of the blockchain, that is, its use in the educational process. Two interconnected tasks can be proposed in this area[2-3]:

1. Automation of the operation of certain components of the educational process or the use of blockchain technology to improve its effectiveness.

2. Educational subjects dedicated to blockchain technology to the educational process introduction.

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