

**УДК: 338.3**

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## **SMART CONTRACT**

The blockchain technology we can call as the most significant innovation after appearing of the Internet. It allows value exchange between parties without the need of intermediaries (middlemen). For example, imagine that two persons making a bet concerning certain tennis match between player A and player B. First guy bet 100\$ for player A, and second one bet 100\$ for player B. So, for today we have three ways how to manage it:

Trust each other – the winner should gain 100 \$ but in this case, parties have to rely on each other and there always would be a risk of denying to pay by losing side (no legal ground)

Both parties can conclude a contract with legal base – in this case, the losing side will have to pay but still, he/she can deny pay immediately or there can be a kind of any disagreement or whatever. If this happens, it will provoke additional costs for legal fees. Moreover, it will take a certain time for this procedure.

Involve a third party (neutral) – both parties give 100\$ each to the third party and then the third party will give the whole amount of money to the winner. But in this case, there are risks as well. The third party can request for some fees for such service, or disappear with money at all.

None of these options are good to choose. We cannot rely on third parties. Working with a contract requires time and money. But blockchain technology provides us with a unique option that is secure, cheap and quick – Smart Contract. It allows to each party to send their 100\$ each to blockchain that will keep these 200\$ and check the result for the bet from several data sources and will give all amount of the money to the winner, without any intermediary—all these sound great. It is worth to explore more about “Smart Contract” as it, from my and many experts’ points of view, is a highly perspective tool that, theoretically, can be used in almost all spheres of activities.

The best thing about the blockchain is that it enables us to operate without slow, expensive, and not reliable middlemen. In addition, it allows us to avoid a conflict between parties, and the most important - it saves our time for such operations. Thus, smart contracts play the crucial role in it. It makes it possible to interact with each other without an intermediary. The concept of “smart contract” was first introduced by cryptographer, legal scholar, computer scientist Nick Szabo in 1994. It was also called as a “digital contract” or a self-executing contract” [1].

Smart Contract is a code written in a computer and submitted to the blockchain network. The code contents certain conditions. When these conditions are met, all the nodes of the network run it and provide with the certain result. It defines the rules and consequences around the agreement (contract) the same as the original contract. One point making it almost gratis in a time/money-saving way, and that puts it in an advantageous position comparing to the traditional contract is that it also automatically enforce the obligations of the contract.

To clearly make you understand what a benefit it is, and explain to you the potential advantage of smart contracts, we will explore an example. Just imagine, you have a contract with someone, and this contract involves financial penalties in case if some of the parties violate certain conditions of the contract. Then, one of the sides breached the rules. To get your money award you will have to contact your lawyers. Then your lawyers will press charges to violated side. If that side does not agree with your charges your lawyers on behalf of you will have to file a lawsuit to the court. The court will need a certain time to consider your case. After that, even if the court will find out the other part guilty, the other part will

have an opportunity to appeal to a higher instance. Thus, it makes the whole process pulled for a long time that is obviously unlikely for you. In addition, let's not forget that it is also required to pay legal fees.

In smart contracts of blockchain network, you are able to include all the terms and conditions in the code and provide it with certain consequences in different cases. If every condition is met successfully, then you can get your reward or whatever it is that you incorporated in the code [2]. The smart contract will implement the result itself without any court, or any other involvement of third parties. It helps us to exchange assets in a transparent and conflict-free way avoiding the services of intermediaries at the same time. Smart contracts have many benefits: no need of external institutions to make decisions, no judges. It allows you to save a lot of time and money to spend on mediators.

The challenge is how to write a code properly without any mistakes that can lead to the bugs. This moment must be explored thoroughly as it is very hard to write a proper smart contract correctly (computer codes). Vital information for the smart contract to execute the contract should be somehow delivered from outside to the inside of the network [3]. For this, we need a kind of tool that would function as a bridge between the real world and the blockchain network. As this kind of bridge, smart contract oracles exist.

#### Classification of smart contracts

You can set different groups of criteria for classification. However, at the moment of technology development, four of them are relevant.

Smart contracts can be distinguished by the runtime environment, which can be either centralized or decentralized. In the case of decentralization, we have much greater independence and fault tolerance when executing smart contracts.

They can also be distinguished by the process of assignment and fulfillment of conditions: they can be arbitrarily programmable, limited or preset, i.e. strictly typed. When there are only 4 defined smart contracts on the smart contract platform, the parameters for them can be set arbitrarily. Accordingly, it is much easier to set them: we select a contract from the list and pass the parameters.

According to the initiation method, there are automated smart contracts, that is, when certain conditions occur, they are self-executed, and there are contracts in which conditions are set, but the platform does not automatically check their fulfillment, for this they need to be initiated separately.

In addition, smart contracts differ in the level of privacy. They can be either completely open, or partially, or completely confidential. The latter means that outside observers do not see the terms of smart contracts. [4]

#### Bibliography

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