

The concept of 'smart contract' is widely used in relation to cryptocurrencies and blockchain operations. Smart contracts also are envisioned as a tool for handling transactional relationships involving storage of electric power in batteries, as provided for in **the National Recovery and Resilience Plan of the Republic of Bulgaria** approved by the European Commission. The appearance of this concept in official documents and its relevance to the disbursement of funds under the National Recovery and Resilience Plan calls for clarification of the very notion of smart contract and a detailed analysis of its characteristics.

Diverse and divergent views have been proposed with respect to the nature of smart contracts, the more common one being that a smart contract is a piece of computer software (code) designed to run and perform certain operations when specific, pre-determined conditions are met. While typically smart contracts are associated exclusively with blockchain protocols, there are also those who see them as including any form of automated transactional relationships, e.g., as applied in vending, gambling, ticketing and other automated machines. The former approach presents an unnecessarily narrowed down notion of a smart contract by associating it with a specific type of technology, while the latter one is more appropriate as it is technologically neutral and can be applied in novel technological solutions, if and when they are introduced. While the latter option may be open to criticism for being overly broad, a substantial portion of the problems in a smart contract executed on a blockchain platform are very similar to those encountered in vending machines, for instance. And if certain phenomena have similar characteristics and, therefore, raise similar issues in theory and practice, there is no reason why they should be regarded as separate from one another.

From the definition of the concept given above, one may conclude that a smart contract is not necessarily a contract in the legal sense of the word. Of relevance in the domain of contractual law are only agreements between legal entities aimed at creating, modifying or terminating a legal relationship, whereas smart contracts may concern operations of non-legal nature, e.g., the recording of information under certain conditions. Therefore, a smart contract may not necessarily have more than one party to it. On the other hand, a smart contract may be designed to entail a wide variety of legal consequences, such as sale of items, licensing or transfer of intellectual property rights (e.g., in the case of NFT), insurance

contract, letter of credit, articles of association (in the case of decentralized autonomous organizations), etc. Therefore, a smart contract may have varying content which may not always have legal consequences. In that sense, the notion of 'smart contract' is closer to the notion of 'document', which may contain a legally binding contract just as it may contain a poem or a shopping list. Smart contracts cannot be regarded as similar to abstract transactions, so long as the latter have specific content, e.g., transfer of rights, but may simply serve different legal purposes.

This may well beg the question to what extent does a smart contract relate to law in the first place? Such a question would be supported by two separate considerations: that smart contracts are not explicitly governed by law, and that there are no means of enforcement of a smart contract in a virtual environment. Neither of these two, however, would withstand logical scrutiny. There are already a host of legal norms pertaining to smart contracts that can actually be enforced, the easiest example being the prohibition of fraudulent enrichment. Such a prohibition is a basic principle in civil turnover applying to all sorts of economic operations. Any property that has changed hands without legal justification can be claimed by its rightful owner, and any court of law would be mandated to rule that it be handed back to them. Insofar as most of the operations currently performed through smart contracts involve exactly transfer of property rights, this principle should also apply to them. There are a number of other rules that apply with respect to smart contracts where their content includes operations regulated by law: acquisition of property, insurance, association of legal entities, etc. The second group of issues, i.e., the means of enforcement, are a lot more complex, as long as they presuppose that the parties to a smart contract are identified as a minimum precondition for possible future action seeking the return of illicitly transferred property or another form of liability. Such identification of the parties, however, is necessary for every kind of contract, as there is no way of seeking a refund for a poorly performed or unperformed service unless the service provider who received the down payment and undertook to provide the service can be properly identified. If that party is known, even if there are no means of enforcing their obligations under the smart contract, the aggrieved party can always seek financial compensation in lieu of the performance due. Therefore, even if the law does not deal explicitly with the effects of smart contracts, the general legal rules and principles apply accordingly.

On the other hand, there are those who claim that while smart contracts are essentially legal in nature, they can be applied directly, without the mediation of a court of law or a bailiff, and are therefore in force and effect beyond the context of a specific national legal system. A practical issue in that context is the fact that no contract can ever contain provisions for dealing with just about any legal consequences that can ensue from it. The law provides rules of interpretation of contracts and ways of filling in gaps in them exactly because the parties cannot foresee in advance what changes in their relationship may occur once the contract between them is in place. Additionally, while in some cases the parties seek to avoid certain effects of a valid contract, those effects do occur by force of the law in order to uphold the principles of fairness, reciprocity and balance in the legal relationship. Therefore, a smart contract cannot exist outside the framework of a specific legal system, nor can it rule out the possibility of judicial interference in case one of the parties to it chooses to seek legal remedies.

The above considerations prompt the conclusion that while technology may change the manner and speed of communication among individuals, it does not alter the essence of human relations, including those governed by law. The movement of property in one form or another remains contingent upon the requirement of having legal justification, even if it constitutes a gratuitous donation. Technology as such, and the smart contract in particular, cannot bypass the requirement for both parties to a contract to enter into relations that are predictable for both of them, giving rise to clear-cut rights and obligations.

What are, then, the differences between, e.g., a smart contract and a sales agreement? A defining feature of the smart contract is that certain automatic operations are executed the moment certain pre-determined conditions are met. Such automaticity precludes the possibility of one of the parties defaulting on a contractual obligation, but creates a host of problems.

Firstly, such automaticity is the result of the smart contract being a piece of software code, a program that runs if certain pre-set conditions are in place. This program, however, is not rendered in a natural human language, which should not be a problem as long as both parties are able to express their will in code. In cases, however, where they have first reached some kind of a written or verbal agreement between themselves, that agreement

needs to be translated into code, whether by one of them or by a third party. If the code is at variance with, or contrary to, the initial verbal or written arrangements, the operations performed by it may have to be reversed to the status quo ante. However, the issue of contract party or third-party liability may also be raised if said party has caused the discrepancy. Even if said discrepancy is disregarded, one should consider the difference between the way the contracting parties perceive the clauses of the contract and the manner in which the elements of the smart contract will be executed by the relevant technology. The natural human language subsumes within itself many rules for filling gaps in the content of a verbal expression, which are complemented by the rules of interpretation of the law. This makes it possible for the will of the parties to be assumed even in respect of matters that are not dealt with explicitly, e.g., through rules such as 'to whom the greater is permitted the lesser is also permitted'. Within the framework of a smart contract, such rules will apply only if explicitly provided; in all other cases the clauses will be interpreted literally since no means for dealing with ambiguities will be available. As was pointed out above, it will be possible to rectify such gaps through the subsequent behavior of the parties, including by litigation, which however implies additional difficulties and a waste of time; therefore, special attention must be given to the translation of the arrangements between the parties into a smart contract.

Another very important issue related to the automatic execution of a smart contract is: in what conditions should it proceed? If those conditions only relate to the virtual environment, e.g., a change in the code of the technical device that controls the execution of the relevant operation, then things are relatively clear. One example of such a change is a transfer of cryptocurrency: the smart contract will be able to automatically verify if the cryptocurrency has cleared into, and been recorded on, the relevant blockchain platform in order to perform the required operation. A problem arises from the fact that such changes are often associated with changes in the physical reality: delivery of goods or provision of services, natural occurrences and the like. Usually, for such contingencies the parties agree on the use of the so-called 'oracle', a source of information – e.g., a website – from which the smart contract will be notified whether or not the relevant circumstance has indeed occurred. The question immediately arises of what will happen if the 'oracle' turns out, for one reason or another, to be wrong. Here the principle of operation of vending machines readily comes to

mind: just because the sensors of the coin slot have been triggered does not necessarily mean that payment has been made, nor the activation of the dispensing mechanism after payment means that the buyer has indeed received what they paid for.

All of these issues can be dealt with in a smart contract but in many cases this will mean that the parties should be prepared for a great deal of potential complications in their relationship. It is for that reason that the lawmakers should devise special rules that take into account the peculiarities of smart contracts in order to guarantee the interests of the parties to them in the event of emergence, modification or termination of a legal relationship between them.