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THE PHILOSOPHICAL AND LEGAL RATIONALE FOR A SYSTEMATIC ANALYSIS OF DIGITAL DISPUTE RESOLUTION MODELS IN MODERN ARBITRATION

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Abstract: In the article, the author presents a systematic analysis of models of digital dispute resolution in modern arbitration. The author studied the dispute resolution models on the platforms "Kleros", "Aragon", "CodeLegit", as well as the Draft arbitration rules for smart contracts "JAMS-2018" and the English "DDRR-2021". The author identifies the following types of models of arbitration dispute resolution: 1) traditional arbitration; 2) traditional arbitration with blockchain elements (a model based on the CodeLegit platform), 3) digital arbitration ("DDRR-2021"). The most important feature and difference of the English "Digital DR Regulation" 2021 is the fact that the entire process from the beginning (occurrence of the case) to the end (execution of the decision) is resolved automatically without the intervention of human arbitrators with the help of an artificial intelligence agent. This is the procedure for resolving a dispute in the field of smart contracts that should be called digital arbitration. The so-called "decentralized arbitration" on the platforms "Kleros", "Aragon", "OpenLaw", "Mattereum Protocol", "Rhubarb Fund", "Jury.Online", "Jur", "OATH Protocol", "Juris" and other models of this type does not allow these models to be considered arbitration. The author believes that these models should be conditionally called crowdsourcing quasi-arbitration.

Keywords: traditional arbitration, digital arbitration, crowdsourcing quasi-arbitration, DDRR-2021, Kleros, Aragon, CodeLegit.

Introduction

The COVID-19 pandemic has accelerated the trend towards the use of intelligent technologies to improve the efficiency and quality of arbitration. When resolving disputes, there was a transition to electronic filing of documents and, as a result, the restriction of personal contacts between the parties. Digitalization is considered as a potential solution to the problem of inefficiency

of traditional courts, weakness of judicial authority, as well as inconveniences for the parties. The process of digitalization is inextricably linked with the future of arbitration courts around the world. Such digitalization (collection of electronic evidence, conducting online hearings, etc. due to the needs caused by the global pandemic, it will have an impact and create a new basis for the functioning of the global arbitration system (Łągiewska, 2022, p. 208).

For example, if physical hearings are not possible, the parties and arbitration tribunals will hold online meetings, video conferences, which will allow them to meet over the Internet in real time. Practical needs and limitations quickly adapt traditional arbitration, which is "done by people", into electronic arbitration, which is "done" using AI technologies (Apostolova, 2020; Koleilat-Aranjo & Dilevka, 2020). Currently, AI applications based on machine learning are already widely available, which can help arbitrators in performing their functions. At some point in the future, it will be possible to conduct arbitration completely without human participation through the systems of arbitrators working on AI. But many authors are wondering - will it still be arbitration? Does arbitration require "human arbitrators" or can it be conducted entirely by AI machines? More specifically, will the machines be able to conduct a legal and fair arbitration process? Will artificial intelligence be able to make decisions? Or is it just a matter of time? In addition, will emotional human intelligence always outperform AI, or will AI, on the contrary, strengthen the arbitration process? (Argerich et al., 2020).

English authors H. Eidenmueller and F. Varesis (2020) answer all these questions positively: "Brought to its defining functional characteristics, arbitration is a dispute resolution process that is managed by an independent/impartial third party, and in which a third party makes a final and binding decision. Functionally, this task can be performed by an AI application that manages a registered arbitration business without human involvement. The limitations that this happens in practice are technological and legal, not conceptual." Can we agree with these statements of English scientists? No – because the robot arbitrator cannot and will not be able to recognize all the subtleties of the relations between the parties to the arbitration; and also because the robot arbitrator will not be able to correctly determine the applicable law, and most importantly - to justify its application. In addition, the robot arbitrator will not be able to catch those moments when arbitrators refuse to apply the law and apply the principles of the business community or the norms of morality and justice.

However, one more important point should be taken into account. If the parties to the dispute decide that the work of the arbitrator to settle the dispute is reliable, fast and economical, then the parties will submit their dispute to such digital arbitration or decentralized arbitration. And only one consideration will be able to force the parties to abandon any decision - whether national state courts will recognize and execute decisions made in whole or in part by robot arbitrators.

This leads to radical changes in legal practice. Traditional dispute resolution methods, such as state court and international arbitration, are ineffective for dealing with a large volume of disputes in the field of smart contracts. Despite the fact that online dispute resolution (ODR) has existed since the 1990s, the industry has not been able to achieve the growth potential that was expected in the early years. But over the past 2-3 years, new projects that have emerged in the field allow us to think about a new innovative way to provide a quick and affordable dispute resolution procedure for new claims of the digital economy.

One of these options is decentralized justice - the result of the convergence of online dispute resolution, blockchain, international arbitration and new technical solutions. As a rule, the decentralized justice projects include the platforms "Kleros", "Aragon Network", "Mattereum Protocol", "Rhubarb Fund", "Jury.Online", "Jur", "OATH Protocol", "Juris", etc. In addition, on April 22, 2021, the "Digital Dispute Resolution Rules" were published in the UK, which regulated the digital arbitration process (digital arbitration or blockchain arbitration) for resolving disputes in the field of smart contracts. The Regulation was created by the UK Jurisdiction Task Force (UKJT) (Kenyon et al., 2021). From our point of view, the digital arbitration procedure is significantly different from the decentralized arbitration procedure that takes place on the Kleros or Aragon platforms.

This article will analyze the dispute resolution models in the above-mentioned decentralized arbitration and digital arbitration according to the

English "Digital Dispute Resolution Rules" of 2021.

Methodology

System analysis involves the study of complex objects by presenting them as systems and analyzing these systems. Therefore, we will investigate each model of dispute resolution on digital platforms, identify their common features and features, and combine them into possible groups.

The technique of these platforms is described in detail in the works of the Australian author J. Metzger (2019) (University of New South Wales), French scientists Y. Aouidef, F. Ast and B. Deffains (2021) (University of Paris II), Dutch jurists A. U. Janssen and T. J. Vennmanns (2021), Russian researchers E. Rusakova (2022), O. Zasemkova (2020), E. Frolova and E. Rusakova (2022) etc. authors.

We have studied the concept of French scientists Y. Aouidef, F. Ast and B. Deffains (2021) and agree with their definition that decentralized justice platforms are a form of digital courts in a broad sense, supported by blockchain technology, the purpose of which is to settle disputes with jury participation (by crowdsourcing juries) to make fair decisions. The dispute resolution procedure on these platforms is encoded as smart contracts on the blockchain, which seeks to guarantee legal certainty. Decentralized justice platforms aim to provide a way to address the interpretation issues inherent in smart contracts. This reduces transaction costs and ensures the prosperity of many decentralized applications built on the blockchain. French scientists considered three projects that play an innovative role in platform justice: "Kleros", "Aragon" and "Jur". However, the "Jur" platform is not yet operational.

The functioning of the Kleros platform as a kind of decentralized justice and blockchain arbitration was also studied in detail by American authors L. Bergolla, K. Seif and Chinese lawyer C. Eken (2022, p. 55). These authors called "Kleros" - a decentralized arbitration solution based on blockchain, based on smart contracts and crowdsourced juries.

Australian author J. Metzger (2019) noted that each decentralized platform promises to provide a dispute resolution method that gives the parties to a smart contract the opportunity to enable an automatically available dispute resolution mechanism that can be encoded directly in a smart contract. The smart contract itself will still eventually be self-executing, but the dispute resolution mechanism will allow you to suspend the automation of execution until the outcome of the dispute. How this result is determined is one of the factors that distinguish these platforms from each other. J. Metzger has already explored 9 platforms, including the above-named "Kleros", "Aragon" and "Jur".

Dutch jurists A.U. Janssen and T. J. Vennmanns (2021) emphasized that the very level of smart contracts already entails (online) dispute resolution. They called this phenomenon smart (contrast) dispute resolution in a broad sense. The authors investigated various forms of smart (contrast) dispute resolution.

Indian authors V. Singh and M. Bahmani (2021) in their publication examined in detail the problems that arise in ensuring the legal recognition of digital arbitration (pp. 45-61).

In 2022, English lawyer J. Schaffer-Goddard (2022) and English lawyers S. Kenyon, D. Jewell, Ch. Mears, S. Gokarn-Millington (2021) presented an analysis of the features of the UKJT Digital Dispute Resolution Regulation and the provisions of the English Arbitration Act 1996.

As a rule, Russian authors study the decentralized platforms "Kleros", "Aragon" and "Jur", as well as some other platforms.

Thus, O. Zasemkova (2020) presented an analysis of the decentralized platforms "Kleros", "CodeLegit" and "SAMBA" (Brazil) (pp. 10-12). The author noted that if the Kleros procedure is a decentralized justice project, then the CodeLegit and SAMBA procedures, also designed to resolve disputes arising from smart contracts, function on fundamentally different principles. Being based on blockchain technology (like Kleros), CodeLegit is much closer to the traditional dispute resolution procedure through international commercial arbitration. At the same time, the dispute resolution procedure is regulated by Blockchain Arbitration Rules developed by CodeLegit in cooperation with an expert in the field of blockchain technology Markus Kaulartz. These Rules in many ways resemble the standard arbitration rules, which is explained by the fact that the UNCITRAL Arbitration Rules were adopted as the basis for their development,

designed to regulate the dispute resolution procedure by international commercial arbitration.

E. Rusakova (2022), examining in detail the procedure for dispute resolution on the decentralized platform "Kleros", noted that "Kleros" considers disputes arising from smart contracts through arbitration, in which the decision is made by randomly selected jurors for the verdict and its execution (p. 280).

A. Gudkov (2020), considering dispute resolution models, singled out: a) state courts, b) professional private arbitration, c) online dispute resolution, d) crowdsourcing dispute resolution (p. 252). The author noted that there are two types of dispute resolution on the blockchain, depending on professional skills and the number of jurors. The first employs professional arbitrators, and the second uses a crowdsourcing dispute resolution model. As an example of the latest model - the crowdsourcing model of dispute resolution – the author studied the platforms "Kleros" and "Rhubarb".

It is obvious that with such a variety of approaches to the problem of digital dispute resolution models in modern arbitration, it is necessary to develop its own method of analyzing the problem posed. We believe that in this article it is necessary to answer the question - which models of digital dispute resolution exist in modern arbitration and what are their inherent features.

Main discussion

Most Russian and foreign authors study the models "Kleros" and "Aragon". We will also consider the CodeLegit models, the Draft Arbitration Rules for smart contracts "JAMS-2018" and the English "DDRR-2021".

Firstly, the Kleros platform. The platform was founded by F. Astom and K. Lesage in May 2017. Efforts to develop the Kleros protocol are coordinated by the Société Coopérative d'intérêt Collectif (SCIC), registered in France. Launched on the Ethereum blockchain in July 2018, Kleros became the first functioning justice platform. which has become operational and the most used at the moment (Bergolla et al., 2022, p. 55). Coopérative Kleros follows a hybrid strategy combining blockchain-based use cases and an online dispute resolution (ODR) system. The platform allows you to appeal decisions. As of November 2020, about 500 disputes were resolved on the Kleros platform and about 400 users participated on the platform as jurors. The

jury was paid about $123,000. in the form of arbitration fees.

Secondly, the Aragon platform. The platform was created in February 2017 by L. Kuende and H. Izquierdo is in Spain and is currently registered with the Aragon Association based in Zug, Switzerland. The Aragon project is to provide users with software tools for creating decentralized autonomous organizations (DAOs). Aragon launched its decentralized court in November 2019 with a mechanism design largely inspired by the work of the Kleros platform (Metzger, 2019, p. 92).

"Aragon Court" is a Web3 plug-in arbitration platform available via API for any decentralized application (DApp), but fully implemented in "Aragon OpenStack". The platform includes a "Protocol of decentralized dispute resolution" The platform court has 239 jurors, but does not inform about the number of resolved disputes. The Russian author O. Zasemkova (2020) noted that after a dispute arises, a seven-day period is provided for the presentation of evidence, which will later be considered by a jury (p. 14). During this period, the creator of the dispute may also decide to close the presentation of evidence at any time. The proofs can be presented in text format, but HTTP and IPFS links are also accepted. The dispute is considered by 5 judges of the "first instance", randomly selected from among the persons who expressed a desire to act as such. The decision is made by a majority vote based on the materials submitted by the parties, as well as the Aragon Network Jurisprudence rules. The platform also allows you to appeal decisions.

So, we can distinguish the following features inherent in dispute resolution on the Kleros and Aragon platforms: 1) blockchain (a decentralized database), 2) crowdsourcing (involving a wide range of jurors in dispute resolution), 3) game theory (a mathematical method for studying optimal strategies in games). We believe that the presence of an element of crowdsourcing in these models - involving a wide range of jurors in resolving disputes, does not allow us to consider these models as arbitration. The dispute resolution models "Kleros", "Aragon" and other models of this type can rather be attributed to digital mediation procedures. From our point of view, arbitration – as a special alternative to state courts for dispute resolution – is characterized

primarily by the appointment of independent qualified arbitrators by the parties. As we can see, neither in the Kleros procedures nor in the Aragon procedures, the requirements for independence and qualifications do not apply to jurors. We can call this model of dispute resolution - crowdsourcing quasi-arbitration.

Third, the CodeLegit platform. Parties who agree to "Codelegit" certified smart contracts also agree to arbitration prior to transacting with one another using arbitration clauses from the "Blockchain Arbitration Association". As a result, in the case of a dispute, predefined (updateable) human arbitrators can be automatically activated to adjudicate on the dispute after which the Codelegit certified smart contract execution resumes. The arbitration agreement "CodeLegit" has a specific form. It is fixed in the form of a code included in the smart contract, and is designated by the term "arbitration library".

As O. Zasemkova (2020) emphasized, the dispute resolution process resembles the standard procedure for dispute resolution by international commercial arbitration, although it has some features due to blockchain technology (p. 15). In particular, in the event of a dispute, the party that considers its rights violated launches the "arbitration library" by calling the "Pause and Send to Arbitrator" function. After that, the smart contract suspends its execution, and the arbitration library sends a notice of arbitration to the appointing authority, which is the CodeLegit platform. Arbitrators are elected by the parties to the dispute from among the persons included in the list of arbitrators provided by CodeLegit, or are appointed by CodeLegit. Just as in ordinary arbitration, the arbitrator of blockchain arbitration must fill out a declaration of independence and impartiality, as well as give his consent to the consideration of the dispute. The person appointed as an arbitrator of the blockchain arbitration must have not only the knowledge that allows him to resolve the dispute, but also have an understanding of blockchain technology and smart contracts. After the appointment of the arbitral tribunal, the plaintiff and the defendant exchange procedural documents, which are also sent to the arbitrators. If necessary, oral hearings are held via videoconference, and then a decision is made, which is automatically executed. Note that quite reasonably Fr. Zasemkova refers dispute resolution on the CodeLegit platform to the

standard dispute resolution procedure by international commercial arbitration with the features of blockchain technologies.

Fourth, the Draft Arbitration Rules for "JAMS" smart contracts. English lawyers K. Scott, S. Brown, R. Flakoll, D. Ossio (2022) wrote that in 2018 the American JAMS Association published a draft set of rules for disputes arising from smart contracts. The regulations contained several features. Discovery is limited to the testimony of an expert witness about the meaning of the code. The review of evidence by the arbitrator is limited to these statements, the code, any wrapper contract and witness statements. The regulation also provides for how to interpret a smart contract written in code. The whole process is extremely fast, and the arbitrator is obliged to make an arbitration decision within 30 days from the date of his appointment. We agree with the classification of English lawyers who referred the Draft Regulations "JAMS" 2018 to the category - "Off chain" arbitration in a digital context. This Draft Regulation combined the procedures of traditional arbitration and blockchain technologies that were used in the Discovery procedure of others.

Fifth, the DDRR-2021 Regulation. From our point of view, the on-chain arbitration process (or digital arbitration process) is well described in the Digital Dispute Resolution Rules (DDRR). In 2021, the United Kingdom Jurisdiction Task Force of the Legal Technology Delivery Group (UKJT), a body created by the Minister of Justice and headed by Master of the Rolls, published version 1.0 of "Digital Dispute Resolution Rules". These arbitration rules, in force in accordance with the laws of England and Wales, are intended for use by parties in commercial disputes, in particular, in disputes related to "crypto assets, cryptocurrency, smart contracts, distributed ledger technology and fintech applications" (Schaffer-Goddard, 2022).

English lawyers have noted that the DDRR is in some ways more ambitious than the JAMS rules. Currently, DDRRS are not a "finished product" and should only be accepted with careful consideration of whether the procedure is appropriate. However, DDRRS are a clear demonstration that the London legal community is serious about creating a safe environment for developing, marketing and investing in new technologies (Scott et al., 2022). There is no information

yet about the resolution of digital disputes under these rules. However, DDRRS received the approval of the Commission of England and Wales in its "Recommendations to the Government on Smart Contracts" in November 2021, where DDRRS were discussed in detail and described as "particularly well suited for disputes related to smart legal contracts". The growing use of distributed ledger technologies and smart contracts, combined with the increasing complexity and scale of decentralized finance, makes it highly likely that DDRRS will play an increasingly important role in the future. Although the Rules are not the only arbitration rules proposed for smart contracts (the JAMS rules were published in 2018, but remain in the draft), DDRRS have a number of innovative features that are not in the JAMS rules (Schaffer-Goddard, 2022).

The Digital DR Regulation defines a smart contract as a digital asset. To include this Regulation in a blockchain smart contract, the following text must be included in the blockchain contract: "any dispute must be resolved in accordance with the "Digital DR Regulation" of the UK Jurisdiction Task Force (UKJT). The "Digital DR Regulation" allows you to include these words in the codes. Since the blockchain is programmed in the form of codes, these words can be included in an encoded form (Kenyon et al., 2021).

In accordance with the "Digital DR Regulation", disputes related to smart contracts can be resolved without the intervention of human arbitrators with the help of an artificial intelligence agent. So, disputes in accordance with the "Digital DR Regulations" can be resolved using an automatic dispute resolution process. Alternatively, such disputes may also be referred to an arbitrator or expert. The Regulation provides a unique mechanism for automatic dispute resolution, which allows the parties to choose a person, a commission or an artificial intelligence agent for automatic dispute resolution. The solution is then immediately applied to the digital asset system, that is, to the platform on which the digital asset exists. Thus, the decision of the digital arbitration is also executed automatically. Rule 8 of the said Regulations makes the results of automatic dispute resolution legally binding for the parties.

J. Schaffer-Goddard (2022) identifies three features of DDRR that can change the principle

of operation of challenging decisions: 1) the provision for on-chain enforcement of arbitration awards by the tribunal; 2) the provision on anonymity between the parties; 3) the provision that "automatic dispute resolution" is legally binding between the parties.

1. By allowing the award to be enforced by the arbitral tribunal, the successful party in the arbitration receives benefits that go beyond those that it could receive from a State court by seeking reimbursement of costs or securing a decision when the decision is challenged.

2. The provision of anonymity during arbitration in the framework of DDRR may be particularly attractive to the parties to transactions in a distributed registry, where anonymity of transactions themselves is the norm. However, the DDRR recognizes that absolute anonymity is inappropriate, providing for the disclosure of "personal data" when it is "necessary for a fair resolution of a dispute, for the enforcement of any decision or decision, for the protection of an arbitration tribunal in its own interests or if required by any law or regulation or court order" (DDRR, Clause 13).

3. While the DDRRS describe automatic dispute resolution as "legally binding", the "Additional Guidance" published with the DDRR indicates that the DDRR "may, for example, be adopted to resolve disputes as to whether the automatic dispute resolution processes were properly followed or worked as intended. Where such automatic processes are present, the parties will need to agree on how the Rules should work together with them" (DDRR, page 12). This increases the likelihood of a situation in which the parties agree to use arbitration in accordance with the DDRR to confirm or formalize the decision of the automatic dispute resolution process in the form of an arbitration award.

So, having studied the features of dispute resolution in accordance with DDR 2021, we believe that this type of arbitration should be attributed to digital arbitration.

Conclusion

1. Based on the conducted research, the following types of arbitration dispute resolution

models can be distinguished: 1) traditional arbitration; 2) traditional arbitration with blockchain elements (a model based on the CodeLegit platform), 3) digital arbitration ("DDRR-2021").

2. The most important feature and difference of the English "Digital DR Regulation" 2021 is the fact that the entire process from the beginning (occurrence of the case) to the end (execution of the decision) is resolved automatically without the intervention of human arbitrators with the help of an artificial intelligence agent. We believe that this procedure for resolving disputes in the field of smart contracts should be called digital arbitration. The procedure for resolving disputes in digital arbitration is regulated by the special Rules of Digital Arbitration, which must be established by the relevant permanent arbitration institution and comply with either national legislation (in this case, the English Arbitration Act of 1996) or an international document (if digital arbitration is created under an international organization, for example, the EAEU).

3. The so-called "decentralized arbitration" on the platforms "Kleros", "Aragon", "Open-Law", "Mattereum Protocol", "Rhubarb Fund", "Jury.Online", "Jur", "OATH Protocol", "Juris" and other models of this type does not allow to read these models arbitration. Traditional arbitration is a form of dispute resolution in which claims are resolved by private individuals (arbitrators), and not by national courts. Like other experts, we believe that the presence of an element of crowdsourcing in these models - involving a wide range of jurors in resolving disputes, does not allow us to consider these models as arbitration. These models can be conditionally called crowdsourcing quasi-arbitration.

Acknowledgement

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