

**Legal status of artificial intelligence
and legal liability in terms of application
of its systems**

By

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Abstract

The study raises the issue of legal status of artificial intelligence, deals with questions of legal liability for artificial intelligence actions, in particular, civil liability for harm caused to third parties by artificial intelligence systems. The need to analyze the mentioned topic is determined by global changes in all fields of social life as a result of large-scale introduction of digital technology, and one of its areas is development of artificial intelligence including that stipulated by the relevant national program of the Russian Federation for the period until 2030. In Russia there is still no special legislative regulation taking into account peculiarities of application of artificial intelligence technology. At the same time, analysis of international experience shows that a whole range of countries already have primary legal regulation of application of artificial intelligence and robotics. However, at the moment in the world there are no unified approaches to legal regulation of artificial intelligence systems, which is connected with a number of issues that do not have an unambiguous solution. These conceptual issues include the issue of liability for harm caused by use of artificial intelligence systems, which is closely related to the issue of legal status of artificial intelligence in its interaction with humans. The author comes to the

conclusion that it is the issue of liability that is the most complex legal aspect of development of artificial intelligence systems and defends the point of view according to which standardization of liability models with respect to artificial intelligence must be implemented at the global level, without limitation to only a nation state, and be aimed to establish the regime of legal regulation of application of artificial intelligence systems which will ensure the required degree of protection of human and civil rights and freedoms, meet the interests of society and the state and rest upon the basic ethical standards.

Key words: artificial intelligence, robotics, robot, legal liability, compensation for harm, digital economy.

Introduction

In order to ensure accelerated development of artificial intelligence in the Russian Federation, research in the area of artificial intelligence, better accessibility of information and computing resources for users, enhancement of the system of training of experts in this area, Russian President Vladimir Putin approved the National Strategy for the Development of Artificial Intelligence for the period until 2030, the corresponding Decree was signed on October 10, 2019 (*Decree of the President of the*

Russian Federation No. 490 of October 10, 2019) (hereinafter the “Strategy”).

In this regard, the President of the Russian Federation instructed the Cabinet of Ministers to ensure introduction of changes to the National Program “Digital Economy of the Russian Federation” (*Passport of the National Project “National program “Digital economy of the Russian Federation”*), including development and approval of the Federal Project “Artificial Intelligence”. Moreover, the Cabinet of Ministers must annually provide the Strategy implementation progress report to the President of the Russian Federation as well as consider funds for execution of this Decree during formation of draft federal budgets in 2020-2030.

Artificial intelligence in the Strategy is understood as technological solutions providing simulation of human cognitive functions and results of performing particular tasks that are comparable at least with results of human intellectual activity.

In the Strategy it is noted that artificial intelligence includes IT-infrastructure, software (in which machine learning methods are also applied) as well as processes and services for data processing and search for solutions (par. 5).

According to the statement of Russian President Vladimir Putin, countries with the development of artificial intelligence will get advantages that are not comparable to nuclear weapons, and Russia has every chance of succeeding in it (*Putin: Countries with the development of artificial intelligence will get advantages that are not comparable to nuclear weapons, 2019*).

Within the framework of the Federal Project “Statutory Regulation of the Digital Environment” (*Passport of the Federal Project “Statutory Regulation of the Digital Environment”*), the Ministry of Economic Development of Russia carries out work on a number of concepts associated with regulation of legal relations in terms of digital economy. One of them is the Concept of Regulation of Artificial Intelligence and Robotics Technology Until 2023 (*Concept of Regulation of Artificial Intelligence and Robotics Technology Until 2023 of December 29, 2019*) (hereinafter also the “Concept”). In the Concept, in particular, it is noted that nowadays in the world there are no unified approaches to legal regulation of artificial intelligence systems, which is connected with a number of issues that do not have an unambiguous solution. These conceptual issues include the issue of self-identification of artificial intelligence systems in their interaction with humans and the issue of liability for harm caused with use of artificial intelligence

systems. The Concept emphasizes that issues of civil liability for harm caused by artificial intelligence systems are the most significant issues of application of artificial intelligence systems in the context of civil relations.

In this regard, the objective to study the institution of legal, primarily, civil liability in case of harm caused by artificial intelligence systems, in particular, to consider issues of identification of persons that will be liable for their actions, as well as the possibility to use other ways to compensate for harm caused by actions of artificial intelligence systems (for example, liability insurance) and change of mechanisms of not only civil but also criminal and administrative liability, is of particular relevance.

The purpose of study of the mentioned issues consists in determination of the fundamentals of legal regulation of new social relations being established in connection with development and use of artificial intelligence systems, substantiation of the ways of legislation development in terms of economy digitization and introduction of artificial intelligence that takes into account the balance of interests of society, the state, companies developing artificial intelligence systems as well as consumers of their goods and services.

Materials and research methods

The scientific framework of the study includes works by Russian (L.S. Bolotova, V.A. Laptev, P.M. Morkhat, V.B. Nagrodsкая, L.A. Novoselova, I.V. Ponkin, O.V. Revinsky, A.I. Redkina, E.P. Sesitsky, V.N. Sinelnikova) and foreign (P.M. Asaro, P. Čerka, J. Grigienė, G. Sirbikytė, S.M. Solaiman) scientists.

The regulatory framework consists of Decree of the President of the Russian Federation No. 490 of October 10, 2019 “On the Development of Artificial Intelligence in the Russian Federation”, which approves the National Strategy for the Development of Artificial Intelligence for the period until 2030, Russian sectoral legislation and regulatory acts of foreign countries, such as Japan’s Basic Act on the Advancement of Public and Private Sector Data Utilization No. 103 of December 14, 2016, the 2011 Nevada Revised Statutes (USA), European Parliament resolution No. 2015/2103 (INL) of February 16, 2017 on Civil Law Rules on Robotics.

The informational and empirical framework of the study in terms of substantiation of legal liability models with respect to artificial intelligence contains the analytical review of the world

robotics market for 2019 prepared by Sberbank of Russia, data of the Concept of Regulation of Artificial Intelligence and Robotics Technology Until 2023 developed by the Ministry of Economic Development of Russia, A Roadmap to US Robotics, 2016, Japan's New Robot Strategy, 2015, a survey on relevant issues of artificial intelligence systems (robotics) conducted by a department of Kutafin University (MSAL).

The research methodology is based on the general scientific dialectical method of inquiry and specific scientific methods of research: formal legal method, method of interpretation of legal rules, legal modeling method. Empirical methods of comparison, description and interpretation were applied. The systemic analysis of the category of artificial intelligence in the context of its application in legal relations was the determinant method.

Obtained results

Concept and legal status of artificial intelligence. There is no generally accepted definition of artificial intelligence. Different definitions of this concept are suggested mainly in the legal doctrine and included in a range of regulatory legal acts primarily of foreign countries. Basically, all these definitions can be divided into two groups: 1) definitions characterizing the area of scientific

knowledge; 2) definitions characterizing attributes and properties of certain devices or systems. In addition, definitions referred to the second group characterize artificial intelligence systems from the perspective of intellectual property law to the fullest extent (*Sesitsky E.P., 2019*) and they are more common.

For example, according to L.S. Bolotova, artificial intelligence is an artificial (computer) system capable of simulating human intelligence, i.e. its ability to receive, process and store information and knowledge and perform various activities with them that are collectively called thinking (*Bolotova L.S., 2012*).

V.N. Sinelnikova and O.V. Revinsky believe that artificial intelligence is a computer program created by humans and (due to the command architecture embedded in it) capable of creating new information or objectively expressed results of its activity (*Sinelnikova V.N., Revinsky O.V., 2017*).

According to I.V. Ponkin and A.I. Redkina, artificial intelligence is an artificial complex cybernetic computer-software-hardware (electronic, including virtual, electronic and mechanical, bioelectronic and mechanical, or hybrid) system with cognitive and functional architecture and own or relevantly available (added)

computing power of required capacity and speed (*Ponkin I.V., Redkina A.I., 2018*).

P.M. Morkhat proposed the following definition of artificial intelligence: it is fully or partially autonomous self-organizing computer-hardware-software virtual or cyberphysical, including bio-cybernetic, system (unit), not living in the biological sense of this concept, with relevant mathematical support, endowed with/having software-synthesized (emulated) abilities and capabilities (*Morkhat P.M., 2018. Legal personality of artificial intelligence in the field of intellectual property law, p. 30*).

A. Gurko succinctly formulated his definition of artificial intelligence. He thinks that it is machines (robots) and/or programs which are aimed at solving intellectual problems, as if such problems were solved by a person (*Gurko A., 2017*).

E.P. Sesitsky proposed a definition of artificial intelligence system which he understands as a computer system including a set of algorithms, computer programs, databases and hardware operating on the basis of artificial intelligence technology (*Sesitsky E.P., 2019*).

In the annual analytical review of the world robotics market for 2019 published by Sberbank of Russia, artificial intelligence is

defined as “the ability of programs and devices to interpret data, learn on their basis and use the gained knowledge for achievement of goals also independently” (*Analytical review of the world robotics market 2019, prepared by Sberbank*).

As for foreign regulatory acts and official documents, for example, Japan’s Basic Act on the Advancement of Public and Private Sector Data Utilization No. 103 of December 14, 2016 (*Japan’s Basic Act No. 103 of December 14, 2016*) uses the term “artificial intelligence-related technology”, which means technology for the realization of intelligent functions, such as learning, inference, and judgment, by artificial means, and utilization of the relevant functions realized by artificial means.

In the 2011 Nevada Revised Statutes (USA) (§ 482A.020 of Chapter 482A – Autonomous Vehicles), artificial intelligence means the use of computers and related equipment to enable a machine to duplicate or mimic the behavior of human beings (*2011 Nevada Revised Statutes*).

Significantly simplifying, we admit using the terms “robot” and “robotics” as synonyms of artificial intelligence, though, certainly, they are not equivalent categories. Robots are programmable machines that can perform particular actions autonomously or automatically. Robotics is positioned as a certain

industry that introduces robots into a particular area. In its turn, artificial intelligence is intended for tasks that can be solved without participation of human intelligence (*Nagrodskaya V.B., 2019, p. 99*).

The legal status of artificial (robot) intelligence closely related to the issue of liability for harm caused by use of artificial intelligence systems is the subject of discussion. It depends on the degree and nature of independence of artificial intelligence (artificial intelligence systems) from humans (*Ponkin I.V., Redkina A.I., 2018, p. 105*). Today scientists studying this issue, are conveniently divided into two camps: those who stand for the status of object of rights for artificial intelligence (they are in the majority) and those who think it is necessary to grant artificial intelligence the status of subject of rights.

A survey on relevant issues of artificial intelligence systems was conducted at Kutafin University (MSAL), and the following difference was identified in the scientists' views. The question was how the respondents assessed the idea of recognition of artificial intelligence technology as a subject of right and the application of rules of legal entities to it by analogy, 75% of them replied that they considered this idea absurd, and only 3% that the idea would be promising and useful (*Nagrodskaya V.B., 2019, p. 108*).

Artificial intelligence (a robot) as an object of rights is programmed for a certain limited range of machine actions, which makes it possible to recognize responsibility of the owner or another person possessing the robot on legal grounds.

Artificial intelligence (a robot) as a subject of rights is also programmed for a certain range of machine actions, however, it is capable of performing actions independently in terms of some circumstances known in advance (*Nagrodskaya V.B., 2019, p. 106*). If artificial intelligence is recognized as a subject of right, i.e. someone who is capable of exercising legal rights and bear legal duties, who will bear legal liability for actions of such a subject: artificial intelligence (a robot) itself or a person that programmed it?

Taking into account the point of view of P.N. Durneva and G.V. Stankevich that seems substantiated to us, according to it an attempt to establish the status of artificial intelligence as a subject is failed at the current stage of law development and, consequently, cannot be implemented (*Durneva P.N., Stankevich G.V., 2019*), we will study the question: who must assume the responsibility and compensate for the harm caused by actions of artificial intelligence?

Legal liability in terms of application of artificial intelligence systems. There are various views regarding modeling of the liability in relation to application of artificial intelligence.

European Parliament resolution No. 2015/2103 (INL) on civil law rules on robotics (*European Parliament resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics*) does not contain rules with direct effect, however, it is one of the first comprehensive legislative acts in this field.

Liability is one of the major issues in that document. 10 provisions in the preamble and an entire section are dedicated to it. Considering this issue, the European Parliament states that under the current legal framework robots cannot be held liable per se for acts or omissions that cause damage to third parties. The existing rules on liability cover cases where the cause of the robot's act or omission can be traced back to a specific human agent such as the manufacturer, the operator, the owner or the user and where that agent could have foreseen and avoided the robot's harmful behaviour. In addition, manufacturers, operators, owners or users could be held strictly liable for acts or omissions of a robot.

At the same time, members of the Parliament assume that the more autonomous robots are, the less they can be considered to be simple tools in the hands of other actors (such as the manufacturer, the operator, the owner, the user, etc.). This argument is often mentioned in the context of discussion of the liability issue: robots are just tools, therefore, particular rules of handling tools would be strange.

The European Parliament follows another approach. Robots of the new generation can be equipped with adaptive and learning abilities. These abilities make their behaviour almost unpredictable, since robots will autonomously learn from their own experience, and their interaction with the environment will be unique and individual. Autonomy of robots raises the question of whether the ordinary rules on legal liability are sufficient, whether new principles and rules should be developed to provide clarity on the legal liability of third parties for the acts and omissions of robots where the cause cannot be traced back to a specific human actor. Moreover, if machines are designed so that they can independently choose their counterparts, negotiate contractual terms, conclude contracts and decide how to implement them, the traditional rules will be inapplicable to them. Therefore, this gives rise to the following question: on the legal nature of autonomous robots. Can

it be within the framework of the current legal categories or it is necessary to create a new category which will have its own range of features and provisions? In order to solve this issue, the European Parliament suggested a whole range of measures:

- to adopt combined regulation that includes legislative provisions on liability along with non-legislative instruments such as guidelines and codes of conduct (par. 51);
- not to establish any restrictions in relation to compensation for damage on the sole grounds that damage is caused by a non-human agent (par. 52);
- until it is established otherwise, to recognize that responsibility must lie with a human and not a robot (par. 56);
- identifying parties bearing the responsibility, to consider the actual degree of autonomy of the robot and the instructions followed by it: the greater a robot's learning capability or autonomy, and the longer a robot's training, the greater the responsibility of its trainer should be (par. 56);
- in cases where identification of the person that must bear the responsibility for damage is quite complicated due to a high level of autonomy of robots, to introduce an obligatory

insurance scheme, as is already the case with the system of liability insurance for car drivers (par. 57);

- to create a reserve fund which can be used to compensate for damage that is not covered by insurance (par. 58). This fund can be general for all smart autonomous robots, or funds must be created for each and every robot category;
- to allow the manufacturer, the programmer, the owner or the user of a robot to benefit from limited liability if they contribute to a compensation fund, as well as if they jointly take out insurance to guarantee compensation where damage is caused by a robot (par. 59);
- to provide each robot with an individual registration number appearing in a specific European Union register (par. 59). It is necessary to trace the link between a specific robot and the compensation fund. This register could be managed by a European Agency for Robotics and Artificial Intelligence;
- to create a specific legal status for robots in the long run. The most sophisticated autonomous robots could be established as having the status of electronic persons responsible for any damage they may cause (par. 59).

It should be noted that the approach presented in the EU Resolution is also criticized, for example:

- the expression “liability of robots” must be excluded, since it implies that robots per se bear civil liability for any caused damage. The term “subsidiary liability” must be used instead of it. Taking into account the concerns that robots can be vested with legal personality, it is out of the question that they can be partially or fully liable for their acts or omissions. Only individuals must bear liability using various insurance mechanisms;
- it is hard to establish the liability for harm inflicted by an autonomous robot. Damage caused by an autonomous robot usually can occur because of a technical defect, which implies application of the manufacturer’s liability rules. Damage caused by autonomous robots can also result from the user’s mistake. Then strict liability or liability based on guilt can be imposed according to circumstances of each particular case.

The issue of liability is a part of also more general studies dedicated to robotics.

For example, in the study of A Roadmap to US Robotics (*A Roadmap for US Robotics. From Internet to Robotics, 2016*), the issue of liability is considered in the context of ethical and legal consequences of development of robotics. The study shows several situations potentially creating a serious challenge for the current system of law. One of them is unplanned harm, when for some reasons an autonomous system performs actions that nobody programmed in it.

Japan's New Robot Strategy (*New Robot Strategy, 2015*) also mentions the issue of liability – in the context of the regulatory reform aimed at creating the required legislative environment for development of robotics.

In this document, it is pointed out that collection and examination of information about accidents with robots, establishment of the extent of liability of manufacturers of devices, their classification from the perspective of the current standards – all these issues must be settled to achieve “robot revolution”. At the same time, it is necessary to take into account the trends of technology development and commercial use of robots. Laws must be amended on the basis of the collected accident information.

Discussions

Basically, it can be pointed out that there are the following main approaches to modeling of the liability in relation to artificial intelligence, in particular, robots (*Analytical review of the world robotics market 2019, prepared by Sberbank*):

1. Full exemption of anyone from liability for actions of a robot, for example, with reference to unpredictable actions of fully autonomous robots as force majeure circumstances. For instance, V.A. Laptev believes that it is worth thinking about the possibility to consider unpredictable actions and decisions of artificial intelligence as force majeure circumstances that exclude liability completely (*Laptev V.A., 2017*).
2. Partial exemption from liability. The model close to full exemption from liability is exemption of a specific person from any liability for actions of robots subject to simultaneous payment of compensation for harm to affected persons either through insurance institutions or through special compensation reserve funds. Therefore, this approach has two different variations: manufacturers or owners (users) can be exempted from liability only if they perform necessary actions for insurance of the relevant risks or participate in the system of

compensation reserve funds. For example, V.A. Laptev thinks that manufacturers or users of artificial intelligence systems must be subject to obligatory insurance of civil liability for harm caused to third parties, as is already the case with vehicle owner liability insurance (*Laptev V.A., 2017*).

Meanwhile, at the moment there is uncertainty about the procedure and the very possibility of application of the existing insurance institutions to relations with robots and artificial intelligence systems. Lack of special provisions in this regard either makes insurance of robotic products or artificial intelligence systems impossible (which negatively affects the possibility of their introduction) or makes it unreasonably expensive (which also hinders development of the industry).

On the contrary, effective functioning of insurance institutions in the industry has a positive effect on the speed of introduction of robots in the civil circulation. For example, an available concluded contract of insurance of liability for harm can be (and is, in a whole range of foreign countries) the key condition for release of some types of robots or artificial intelligence systems into circulation.

In this regard, the Concept of Regulation of Artificial Intelligence and Robotics Technology Until 2023 states that in the medium term it is necessary to determine the cases and conditions of obligatory insurance of liability for harm caused by application of robots or artificial intelligence systems, including as an alternative to other regulatory tools.

3. Liability only in case of guilt. According to this model, liability for actions of robots arises only if there is guilt of a specific subject.

In addition, exactly this model allows for the biggest number of various options of liability:

- if a robot causes damage which results from its structural defect, the liability lies with the manufacturer;
- if an accident occurs because of a software failure, the liability lies with the software developer;
- if a robot is sold with open-source software, the liability lies with the person who programs the application that leads to the damage caused by the robot;
- if a robot is self-learning, the liability lies with the person that makes the greatest contribution to its learning;

- if a robot executes specific commands, the liability lies with the operator or the user that provides these commands.

With consideration of peculiarities of a specific legal system, this approach allows for different combinations of liability, for example, joint and several liability of several subjects.

Moreover, settlement of the issue can vary depending on whether the user and/or the affected person is a professional or not in a certain area of the robot's application.

4. Limited strict liability of the manufacturer (owner, another person). In this model, very close to the second position described above, liability is strict but at the same time limited. A condition of limited liability can be, for example, insurance of risks of using a robot, contribution to the compensation reserve fund, performance of other actions (for example, equipping a robot with a black box, red button for rapid shutdown, provision of information about its work, etc.).

Artificial limitation of manufacturers' liability is a way to increase the innovation potential in the robot industry, reducing concerns regarding liability-related expenses, and to exclude the rule according to which manufacturers must be liable for the risks which could not be avoided.

In the Concept of Regulation of Artificial Intelligence and Robotics Technology Until 2023, it is noted that it is necessary to further work through the institution of civil liability without guilt for cases of harm caused by artificial intelligence systems that have a high degree of autonomy in decision-making, including from the perspective of identification of persons that will be liable for their actions, as well as the possibility of use of other methods to compensate for the harm caused by actions of artificial intelligence systems (for example, liability insurance, etc.).

5. Full strict liability for actions of robots. It is supposed that according to the general rule a certain person is considered responsible for actions of robots. In this model, manufacturers (especially in consumer relations) and owners of robots recognized as the source of increased danger most often will be liable persons. Indeed, many technologies of artificial intelligence (unmanned aerial vehicles, medical and industrial robots) are most likely to be attributed to sources of increased danger, then the liability for the harm caused as a result of their use will arise in accordance with Art. 1079 of the Civil Code of the Russian Federation (*Civil Code of the Russian Federation (Part Two), No. 14-FZ of January 26, 1996*).

P.N. Durneva and G.V. Stankevich note that recognition of activity associated with use of artificial intelligence as a source of increased danger is the most obvious (first) mechanism among those that can be used in settlement of the issue of liability for harm caused by artificial intelligence. In addition, the authors do not exclude the need to adapt the civil rules on source of increased danger for these purposes (*Durneva P.N., Stankevich G.V., 2019*).

6. Position suggesting that robots are vested with legal personality (rights and obligations, for example, the status of electronic individual), which, therefore, will allow them to bear personal responsibility. Some researchers think that robots must be given the status of electronic person in order to exempt their creators and users from potential liability for actions of artificial intelligence (*Solaiman S.M., 2017, p. 157*). P.M. Morkhat supposes that introduction of a separate special institution of electronic person will put this legal relation and the applicable legislation in order (*Morkhat P.M., 2018. Artificial intelligence unit as a legal entity, p. 68*).

Meanwhile, the question of whether an artificial intelligence system can be held liable for its actions, directly related to the question of possession of legal personality by artificial

intelligence, raises a lot of discussions. Vesting artificial intelligence with legal personality, we liken it to humans. However, this artificial intelligence system does not have human consciousness and senses to understand that it commits a particular offense.

It should be noted that, according to Peter Asaro, some aspects of legal personality can apply to entities which fall short of fully-fledged personhood. In other words, from this point of view, an artificial intelligence system can be considered as subjects possessing a kind of legal quasi-personality (*Asaro P.M., 2007*). An artificial intelligence system can be vested with some limited rights and duties for achievement of certain goals in a particular area rather than for vesting this system with full legal personality. For example, in the context of access to voice data obtained by a virtual assistant installed on a smartphone in case of crime investigation.

According to a number of authors, if an artificial intelligence system is vested with certain quasi-rights, it means not that it is provided with real rights but that there is a legal fiction aimed at simplification and optimization of application of the current legal regimes.

However, it should be considered that an artificial intelligence system cannot fully realize and understand the consequences of harmful actions made by it. With respect to criminal liability, this leads to almost complete lack of the mental element of crime, consequently, lack of elements of crime. The issue of liability of artificial intelligence systems themselves is in many ways of a dead-end nature, exactly because of the complete senselessness, in this case, of criminal or administrative sanctions (established exactly for humans), which are simply inapplicable to artificial intelligence systems, have no sense in relation to them. In this regard, the Concept of Regulation of Artificial Intelligence and Robotics Technology Until 2023 states that in the medium term it is reasonable to conduct additional research on the issue of changing mechanisms of not only civil liability but also criminal and administrative liability.

This option of liability, like the option with total lack of liability, is extreme. Other models are between these two extremes.

7. Combined regime of liability. It implies that different regimes of liability are applied for different robots. This involves ranking of robots according to the degree of their danger to third parties and society and compliance with special conditions for acquisition of their ownership. The need to apply this approach appears logical.

The real actor model is the most common (conventional) at the moment. According to it, artificial intelligence is a tool of a real offender, perpetrator of an offence. Consequently, in this case we will always know the offender, a specific person who will be liable for an action of a certain artificial intelligence system. Implementation of this model will not require introduction of any significant amendments to the current legislation.

Meanwhile, artificial intelligence is a new phenomenon, which is still to be studied in detail, it is capable of performing tasks without participation of human intelligence (*Vasily V. Tarakanov, Agnessa O. Inshakova, Vladimira V. Dolinskaya, 2019*). It is this function that allows artificial intelligence act in a different way in different situations depending on the previous actions. “If artificial intelligence turns out as planned, i.e. a thinking human-like robot with feelings and emotions, then the laws would need to be altered to encompass the roles of robots in society. It means that lawmakers must review the existing legal framework and adapt it to the changing needs of society” (*Čerka P., Grigienė J., Širbikytė G., 2015, p. 377*). At the same time, the general vector of possible changes must be aimed at guaranteeing effective and fair distribution of responsibility in case of harm caused by an artificial intelligence system.

Conclusion

The 21st century is the time of development of scientific technologies (*Elena I. Inshakova, Anatoliy Y. Ryzhenkov, Agnessa O. Inshakova, 2019*). Developments in the field of artificial intelligence and robotics have become one of their achievements. Unfortunately, application of these fields in practice is not fully provided with an international and national legal basis.

The issue of liability closely related to the issue of legal status is really one of the most complex with respect to legal aspects of development of artificial intelligence systems and robotics. Establishment of liability for the harm caused by use of artificial intelligence is the most controversial legal issue. This is due to a range of factors. First, institutions of liability can have particular nuances for different categories of artificial intelligence, depending on the degree of their social danger, controllability or learning capability. Second, it is completely difficult to establish factual circumstances of infliction of harm in some cases. Third, one and the same situation can be solved in a different way from the perspective of a specific jurisdiction. That is why national peculiarities of a specific legal system often do not make it possible to take into account the available experience of other countries. As a consequence, there is a wide variety of points of view on this

question among lawyers. The issue of liability itself is a kind of showcase of the whole issue of legal regulation of development of artificial intelligence.

Meanwhile, the models of liability with respect to artificial intelligence considered in the study are not limited to only a nation state. That is why their standardization must be implemented at the global level.

Artificial intelligence can be both good and evil, consequently, legislators must take special security measures to create and manage the register of robots with identification of their owners and prohibit creation of “killer robots” and programming for infliction of harm, based on the principle that the human is the highest value of society and the state.

The regime of legal regulation of application of artificial intelligence systems must ensure the required degree of protection of human and civil rights and freedoms and meet the interests of society and the state.

Development of artificial intelligence technology must rest upon the basic ethical standards and involve as follows:

- the priority of human well-being (the goal of ensuring human well-being must prevail over other goals of

development and application of artificial intelligence systems and robotics);

- prohibition of infliction of harm on the initiative of artificial intelligence systems and robotics (according to the general rule, development, circulation and application of artificial intelligence systems and robotics capable of causing harm to humans intentionally on their own initiative should be restricted);
- controllability by humans (to the extent it is possible with consideration of the required degree of autonomy of artificial intelligence systems and robotics and other circumstances);
- projected compliance with the law (application of artificial intelligence systems must not lead to the developer's violation of legal rules);
- prevention of hidden manipulation of human behavior;
- projected security (a sufficient level of personal and social security must be ensured during development of artificial intelligence systems).

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