Editorial
UDC 34:004
EDN: https://elibrary.ru/zkbuks
DOI: https://doi.org/10.21202/jdtl.2024.25

Digital and Nature-like Technologies: Features of Legal Regulation

Ildar R. Begishev
Kazan Innovative University named after V. G. Timiryasov, Kazan, Russia

Anna K. Zharova
National Research University «Higher School of Economics», Moscow, Russia

Maksim V. Zaloilo
Institute of Legislation and Comparative Law under the Government of the Russia, Moscow, Russia

Irina A. Filipova
National Research Lobachevsky State University of Nizhny Novgorod, Nizhniy Novgorod, Russia

Albina A. Shutova
Kazan Innovative University named after V. G. Timiryasov, Kazan, Russia

Much has been written in scientific literature about the growing influence of digital technologies on modern society. The most significant digital technologies include, first of all, artificial intelligence, robotics, wireless communications, blockchain, virtual and augmented reality, the Internet of Things, digital twins, and other new industrial technologies. Among them, the group of artificial intelligence technologies is of particular interest, as it outpaces the other groups of technologies in terms of extensive use. Services based on artificial intelligence, especially generative artificial intelligence, are becoming commonplace, transforming work processes, hobbies, and everyday life.

However, it is not only digital technologies (and digital services based on them) in their pure form that are changing the real (physical) world; the influence of nature-like technologies is also growing that allow reproducing living nature systems and processes in the form of technical systems and technological processes. These include, for example, biotechnologies (including genetic engineering), neurotechnologies (neural prosthetics, neural interfaces, etc.). Strictly speaking, the above technologies are at the intersection

of digital and nature-like technologies, as their development became possible due to digitalization of production, business, research, and communications. The currently manifesting trend towards neuromorphization of artificial intelligence also brings it closer to nature-like technologies. As is known, one of the approaches to the creation of artificial intelligence is the ascending (biological) one, associated with the construction of neural networks that artificially model processes similar to those occurring in the human brain.

Whereas a few years ago the question of regulation usually referred only to the use of the above-mentioned technologies, nowadays the opinion about the need to create a system of legal regulation more and more often refers not just to the use of these technologies, but also to the possible ways of their development. The potential of using these technologies is too attractive, and simultaneously with their development and practical dissemination, various risks increase significantly. Parliaments in different countries and international organizations are discussing the inclusion in the legal system of norms regulating the use of these technologies, and often the direction of their evolution.

Some issues are already reflected in existing legislation and judicial practice. For example, the European Union Artificial Intelligence Act of 2024 regulates the use of technologies and products based on artificial intelligence, with a special focus on general-purpose AI models in Chapter 5 of the Act. The Act provides for additional obligations imposed on the providers of such models, and if they are included in the list of models with systemic risk, the number of legal obligations increases. Another example of legal regulation in this area is the “Provisions on the Administration of Deep Synthesis Internet Information Services” published by the Cyberspace Administration of China on November 25, 2022 (it is often referred to as the “Provisions of Deepfake Regulation”). The document contains a number of requirements for the provision of deep synthesis services for the creation of images, videos, audios, and texts. The generated content must comply with information control rules and be labeled as synthetically created, and providers must take measures to prevent misuse of the service and label content created by artificial intelligence.

An example from judicial practice is the decision of the Supreme Court of Chile of August 9, 2023, concerning the right to privacy by protecting the work of the human brain. The issues addressed by the decision can be categorized as personal data, neurodata, and neural rights of the individual. The Supreme Court decision came as a result of handling a constitutional protection lawsuit filed against Emotiv Inc. of San Francisco, USA, which commercialized a wireless headset with sensors that collect neurodata, i.e. information about the electrical activity of the brain. The decision states that privacy is an important aspect of human integrity, human dignity and human rights such as cognitive freedom, freedom of thought and identity. Such a decision was made possible by the deliberate efforts of Chilean parliamentarians to incorporate neurorights into the state legislation.

This issue of the Journal presents research by authors from different countries on the use and regulation of digital and nature-like technologies, the challenges posed by the increasing use of these technologies and products, and proposed solutions to the problems.

The first article of the issue – "Legal issues of ensuring technological sovereignty" (**Maksim Zaloilo (Russia)**) – proposes the theoretical and legal model of ensuring technological sovereignty. It also considers the concepts of technologocentrism and digital (technological) solidarity, as well as the strategic bases of scientific and technological development. The author raises general questions concerning the provision of technological security and the definition of science-based vectors of their solution, and, as a consequence, increasing the importance of maintaining the state independence in the field of science and technology. Without this, effective economic development and the sustainable functioning of state institutions critical for people's lives become impossible. The technological imperative underlying the formation of modern technogenic civilization has become an important factor for the transformation of law. In turn, law as a universal regulator of social relations has to respond, solving the difficult task of protecting the technological security of the country.

The next article – "Human genome editing: managing technological risks through legal means" (**Aleksandra Troitskaya, Konstantin Sharlovskiy (Russia)**) – is devoted to the problems of legal regulation of using genetic engineering as one of the most demanded biotechnologies today. It allows changing DNA and ensuring the transmission of the genetic program to the next generations of living organisms. The article presents the results of the study of various approaches to the regulation of genetic editing for reproductive purposes, defines the conditions and peculiarities of the application of possible regulatory mechanisms and assesses the current legislation in this area.

The issues of legal regulation of digital technologies are of concern to authors from European countries who consider the emerging conflicts and risks between blockchain technology and data protection legislation (**Fabio Severino, Ludovica Sposini, (Italy)**). The most urgent problems in this area are addressed, which are caused by the shortcomings of traditional blockchain models and the "right to be forgotten" enshrined in current European law. Particularly interesting is the analysis of the materials on the emerging issues presented in the study. They describe a hybrid solution to guarantee the right to cancellation and modification of personal data and to address the identified incompatibilities between technology and existing regulation.

It is also interesting to study the emerging approaches to the regulation of technologies in countries whose experience is not so often demonstrated in the scientific literature. This allows taking a broader look at the problem and revealing new facets for further research. For example, one of the articles in this issue identifies the difficulties

on the way to regulating the use of digital technologies in the national cadastral system of Uzbekistan (**Robiya Toshboeva (Uzbekistan)**). The use of artificial intelligence can improve the implementation of cadastral registration, provided that a quality legal framework is established. The latter is difficult to achieve without a clear regulation of the legal regime of artificial intelligence in the national legislation.

The growing use of artificial intelligence technologies in the private sector entails changes in both business processes and relations between employers and employees, thus affecting both business law and labor law. The problems of legal regulation of using artificial intelligence for competitive procurement are analyzed in the next article (**Dmitriy Kazantsev (Russia); Pavel Dohnal (Czech Republic), Pavel Dohnal Jr. (Denmark)**). The authors identify the most promising areas for the creation of legal regulation of the relevant relations. They provide a real-life example of complex procurement of high-tech equipment as an experimental model and predict the use of artificial intelligence in procurement in the future. No less interesting is the topic of forming legal regulation in the sphere of applying artificial intelligence in the recruitment of employees (**Denis Novikov (Russia)**). The problems arising from the introduction of AI-based services in the hiring procedure are manifold. They include the need to protect the applicant's personal data, the risks of discrimination and unjustified refusal to hire due to biased algorithms, and the distribution of responsibility for the decision made with participation of the AI system. In order to avoid additional mistakes, it is worth referring to foreign best practices, which will allow taking into account the available experience and will help to design an optimal national regulation.

Two other articles included in this issue deal with criminal law and criminological problems. The first one (**Fotios Spyropoulos (Cyprus, Greece)**) is devoted to new approaches in criminology. It allows identifying and defining the area of digital criminology, which investigates the potential use of new technologies for criminal purposes. The world is increasingly becoming a "hybrid" world: reality and virtual environment will become more and more intertwined. This will also affect crime, which makes us think about adapting existing criminal legislation to the new phenomena. Another article (**Valentina Babaeva (Russia)**) touches upon the functions of newsmaking criminology, taking into account the "flow" of the bulk of media resources into the Internet and the steadily growing influence of social networks, blogs and video hosting as alternative media on public opinion. The article describes the changing opportunities for interaction between the media and law enforcement agencies and the new risks arising from the coverage of materials about law enforcement and crime in such media.

The next two articles in the issue reflect international legal issues. The first one examines unmanned aerial vehicles, as their development and use leads to violations

of the airspace of other states. The author notes that the topic of unmanned aerial vehicles (drones) as autonomous weapons usually includes a discussion of what rules of international law should govern their use, and the extent to which current international law is in principle capable of responding to changes resulting from digitalization (**Milad Kashi Kamijani (Iran)**). Another article is related to digital technologies used in international justice, namely in the courts of integration associations (**Valentina Talimonchik (Russia)**). Its author aims to analyze the competence and procedures of the courts of integration associations that allow them to resolve disputes related to digital technologies. Ultimately, the prospects for handling this category of disputes are determined. The comprehensive analysis of various sources, including scientific sources, international treaties and acts of judicial practice, results in the proposal to introduce a definition of the content of disputes related to digital technologies in relation to the courts of integration associations.

The scientific review that concludes this issue of the Journal is of particular interest. It deals with the topic of neural rights and the increasing penetration of neurotechnology from research laboratories into ordinary people's lives (**Yan An Cornejo (Ecuador)**). The development of neurotechnologies has opened up tremendous opportunities to understand and improve the functioning of the human brain, but it also led to serious concerns about the protection of human rights, privacy, and mental autonomy. Today, medical devices based on neurotechnologies can significantly improve the lives of people with certain diseases, but, in parallel, they collect data on brain activity and can be used to "hack" the mind. The latter necessitates the discussion of establishing a legal framework to guarantee the responsible development and use of neurotechnologies. Such legislation should include the rights to mental privacy, neurotechnological non-discrimination (the right to equal treatment regardless of a person's neurobiological characteristics), and access to one's neurodata. Equally important is the right to personal identity and free will as the ability to make decisions independently without external interference.

The presented achievements of legal doctrine in the studies of digital and nature-like technologies show that the practice of their use gives rise to many complex ethical, social, legal issues at the "intersection of law, science and technology". Law is changing in response to changes in science and technology and is becoming more dynamic. The topics touched upon in this issue encourage discussion of new global challenges and risks that require the development of a strategic consensus in understanding the latest legal phenomena and processes. They also demand searching for adequate and scientifically grounded answers that open new horizons and perspectives, transforming the existing ideas about law.

We hope that this issue of the Journal will be of interest to a wide range of readers, and the articles that have been published will serve as a good motivator for those potential authors who would like and are ready to demonstrate their promising scientific results and developments in the sphere of innovations and law on the pages of our periodical (Fig. 1).

Fig. 1. Geography of the visitors of the Journal of Digital Technologies and Law website (160 countries as of September 30, 2024)

The Journal has a large audience of Russian readers and publishes a significant number of Russian authors (Fig. 2). An important milestone in its scientific activity this year was indexing in the authoritative source of bibliographic information on national periodicals – the largest Russian bibliographic database of scientific citation – RSCI, which accumulates not only the research works, but also information about their citations. Inclusion of the Journal into RSCI is an important step towards recognizing the high scientific level of the Journal. It opens new opportunities for authors and editorial staff, provides the system users, readers and researchers all over Russia with a wide access to the papers of the authors who have published the results of their scientific work with us. The system is interesting for its analytical capabilities. It allows not only tracking the publications of Russian researchers in scientific editions and their citations in other journals, but also forming various scientometric indicators of the Journal based on the obtained information.

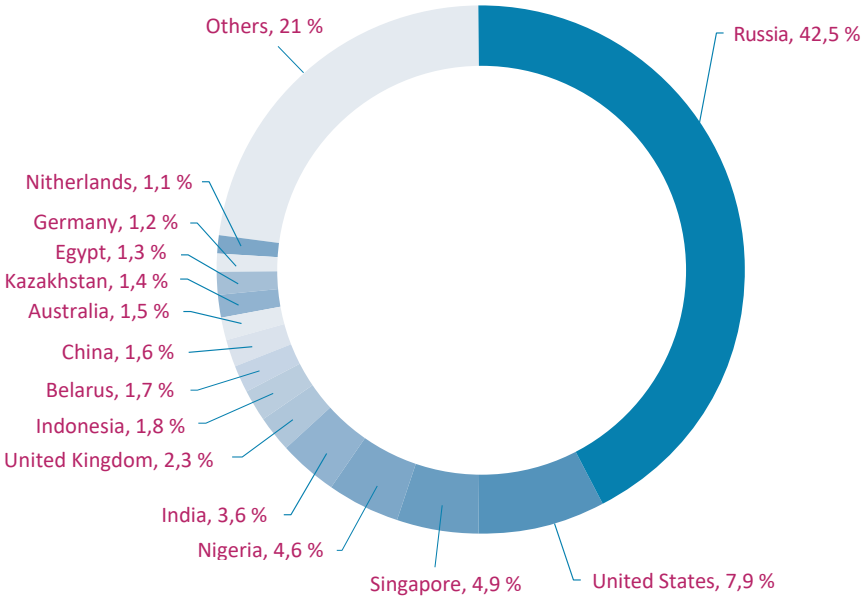

Fig. 2. Statistics of visiting the Journal of Digital Technologies and Law website (as of September 30, 2024)

In 2024, Journal of Digital Technologies and Law was the general information partner of the 3rd International Scientific and Practical Conference "Digital Technologies and Law", the largest in Russia and the Commonwealth of Independent States. This is a large-scale event, organized annually as part of the International Forum Kazan Digital Week 2024 jointly by Kazan Innovation University named after V. G. Timiryasov and the Ministry of Digital Development of State Administration, Information Technologies and Communications of the Republic of Tatarstan with the assistance of Rifkat Minnikhanov, President of the Academy of Sciences of the Republic of Tatarstan, Chairman of the Council of the Association for Assistance to Digital Development of the Republic of Tatarstan. Every year the conference gathers thousands of participants from dozens of countries around the world.

In order to further develop international dialog, we are ready to interact with leading and young specialists, researchers, experts, and practicing lawyers to publish their scientific developments on improving current approaches and creating new methods in the field of ethics, legal regulation and protection of public relations associated with digital technologies.

We would like to express our gratitude to the authors, reviewers, members of the editorial board, and ambassadors of the Journal for their cooperation and to the readers for their growing interest in our publication.