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## Artificial intelligence as a tool for legal reform: Potential, trends and prospects

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■ **Abstract.** The purpose of the scientific research is to summarise and develop theoretical knowledge about the potential, trends and possible areas of artificial intelligence technologies use as an instrument of legal reform, a means of improving the efficiency of its implementation. The methodological foundation of scientific research is a complex of principles of scientific cognition (historicism, scientificity, comprehensiveness, pluralism), methodological approaches (activity, systematic, comparative, axiological), general methods of thinking (analysis, synthesis, abstraction, generalisation), philosophical (dialectical, metaphysical, hermeneutical, epistemological), general scientific (historical, synergetic, functional, structural) and specific scientific (formal-legal, comparative legal) methods, the application of which ensured the validity and reliability of the results of the study of the nature of artificial intelligence as the latest tools of technology for legal reform in modern conditions. The scientific originality of the research is that for the first time the potential of artificial intelligence technologies is highlighted as an important tool for legal reform, the latest means of improving the efficiency of its implementation due to the ability of artificial intelligence to make rational legal decisions that are most appropriate to the circumstances of legal development, in fact in real-time, in particular through the expansion of the prospects of legislative activity, improvement of the legislative process and diversification of legislative technique through the digitalisation of law; the characteristics of the current state, trends and main vectors of the introduction of artificial intelligence in the legal sphere and legal practice have been improved; scientific ideas about doctrinal and regulatory approaches to understanding the nature of artificial intelligence, controversial issues and possible threats and challenges related to the legal regulation of the establishment, implementation and use of artificial intelligence technologies have been further developed. The conclusions of the scientific research are as follows: the spread of artificial intelligence technologies in the modern world is gaining momentum. Pretty soon, people will not be able to imagine life without artificial intelligence systems, which are expected to become the largest innovative project in the history of human civilisation. There is still no unified approach to understanding the nature of artificial intelligence in the technical sphere, which causes some uncertainty in the legal, social and moral and ethical spheres. There is a discussion between different groups of legal experts on the legal aspects of the development of artificial intelligence, the possible recognition of the legal personality of robots with artificial intelligence, the necessity to develop new mechanisms for the implementation of legal liability and compensation for damage in the context of using artificial intelligence. In recent years, examples of the implementation of artificial intelligence systems in various spheres and segments of social activity have been appearing intensively, and most of them are positively impressive. Using artificial intelligence technologies in the legal sphere and legal practice is an important factor in the development of the legal system, ensuring the rights and freedoms of men and citizens. The potential of artificial intelligence technologies can contribute to the solution of complex, priority legal

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tasks, and the implementation of significant and progressive legal transformations (innovations in the legal system, the system of law, the system of legislation, etc.) Using artificial intelligence in legal reform allows for significantly expanding the horizons of legislative activity, improving the legislative process and diversifying the legislative technique

■ **Keywords:** information technology; artificial intelligence; artificial intelligence technologies; digitalisation; legal regulation; legal development; reform; legal reform; legislative activity

## ■ Introduction

The current stage of development of social relations is distinguished by the rapid intensification of digital (information) technologies. Intensive advancement of science and technological progress has become the main features of modern society. Using digital technologies has given impetus to the processes of transformation in society – the information transformation of social relations, which is expressed in using modern digital technologies in various spheres of human activity. The digital revolution as a factor of dynamic development has resulted in the establishment of a digital economy, the development of the foundations of digital law, and a new configuration of social relations based on using the Internet, social networks, and other information and communication technologies. Modern digital technologies develop a new way of production and establish prerequisites for the transition to a new development, digitalisation of social relations and the law itself that regulates these relations [1].

One of the advanced information technologies of modern times is artificial intelligence, it is already among the people, but it did not appear as everyone expected. It is the silent backbone of financial systems, electricity and supply networks to retail stores. It is the invisible infrastructure that guides through the streets, tells drivers the destination on the navigation maps, finds the right meaning in the words misspelt and determines what to buy, watch, listen and read based on the analysis of the requirements, preferences and previous orders. This technology is the foundation of the future as it intersects with all aspects of human life: health and medicine, housing, agriculture, transportation, sports, and even love, sex and death. Artificial intelligence - is not a technological trend, a catchphrase or a temporary fun, but the third computer era. However, today the world is in the midst of fundamental changes different from those experienced by the generation of the first industrial revolution [2]. Artificial intelligence technologies are of particular importance in countering and containing the coronavirus (COVID-19) pandemic - from analysing data to diagnosing people who only suffer from this disease and identifying the effects of its treatment and vaccination [3].

The fourth industrial revolution, or Industry 4.0, is a modern era of innovation based on advanced technologies that are radically transforming all areas, sectors and industries of the economy. A new type of industrial production is emerging, based on the so-called Big Data and its analysis, full automation of production, virtual and augmented reality technologies, etc. Google has already announced that artificial intelligence will do more for humanity than the discovery of fire or electricity. Crowdsourcing, sharing economy, biotechnology, robotics, cloud infrastructure, Internet of Things and artificial intelligence are not the future, but the present. Describing the industrial revolution in his book “The Fourth Industrial Revolution”, Swiss economist Dr K.M. Schwab, founder and chairman of the World Economic Forum in Davos, notes that it blurs the boundaries between the physical, digital and biological spheres. Our world of the 21<sup>st</sup> century is changing too fast [4].

Modern computer and software technologies are developing intensively every day. The most promising but no less controversial technology, which is already used in many spheres of social reality, is artificial intelligence, which is metaphorically called “the most important product of human intelligence” or “the last invention of mankind”. Artificial intelligence systems are potentially applicable in the legal field, and their implementation is already occurring in legal practice when it is necessary to automate routine actions to support lawyers in providing quality services and simplify access to justice for the general public. Artificial intelligence can provide a correct and efficient solution to various legal problems, which will contribute to improving the efficiency of legal regulation. Therewith, the rapid development of the latest technologies, in particular artificial intelligence systems, the Internet of Things, cloud technologies, etc. necessitates changes in international and national legislation. Currently, the leading countries with developed legal orders have already thought about the issues of determining the legal status of artificial intelligence and legal regulation of its development and use. Thus far, these are only the first timid steps, but in the future, all this can cause global changes in the legal system up to the development of

full-fledged complex institutions of law and legislation, possibly branches and sub-branches of law [5].

By the beginning of the third millennium, humanity has accumulated a significant number of various social, economic, environmental, industrial, military, educational, medical and other problems that are either of a planetary nature or are important for most countries. The reason for these problems is mainly the natural limitation of a person in the ability to make rationally balanced decisions in a multifactorial and nonlinear world. The introduction of information technologies, including artificial intelligence technologies, is an integral part of the development of socio-economic, scientific, technical, defence, legal and other activities in areas of national importance. Artificial intelligence technologies are designed to contribute to the transformation of the economy, labour market, government institutions and society in general [6]. According to the right statement of Y.N. Harari, perhaps the most important thing is that artificial intelligence and biotechnology offer humanity the power to reform and redesign life [7]. Considering the above, the study of theoretical, methodological and applied aspects of the relationship and interaction of legal reform and artificial intelligence, its nature, potential and prospective vectors of application in the process of implementing significant, progressive legal changes, restructuring of law (legal system, system of law, system of legislation) is of particular importance [8].

*The purpose of this research* is to summarise and develop theoretical knowledge about the potential, trends and possible areas of artificial intelligence technologies as a tool for legal reform and a means of improving the efficiency of its implementation. To achieve this purpose, the following tasks are defined: first, to analyse doctrinal and regulatory approaches to understanding the nature of artificial intelligence, controversial issues and possible threats and challenges associated with the legal regulation of the establishment, implementation and use of artificial intelligence technologies; secondly, to describe the current state, trends and main vectors of artificial intelligence application in the legal sphere and legal practice; thirdly, to expose the potential of artificial intelligence technologies in the implementation of significant, progressive legal changes, the transformation of law as a special socio-cultural phenomenon.

According to the results of the study, the potential of artificial intelligence technologies as an essential tool of legal reform, the newest means of improving the efficiency of its implementation due to its ability to make rational legal decisions that are most appropriate to the circumstances of legal development, in

fact, in real-time, in particular through expanding the legislative horizons, improving the legislative process and diversifying the legislative technique through the digitalisation of legal information, was first identified; the characteristics of the current state, trends and main vectors of the introduction of artificial intelligence in the legal sphere and legal practice have been improved; scientific ideas about doctrinal and regulatory approaches to understanding the nature of artificial intelligence, controversial issues and possible threats and challenges associated with the legal regulation of the establishment, implementation and use of artificial intelligence technologies have been further developed.

### ■ Outline of the Main Material

The definition of “artificial intelligence” is multifaceted and is used as a narrative that describes the intellectual capabilities of computers in their decision-making [9]. Historically, the first definition of “artificial intelligence” is the definition proposed by J. McCarthy in 1956 within the framework of the Dartmouth Conference, namely: artificial intelligence is the science and technology of developing intelligent machines, particularly intelligent computer programmes [10]. Currently, scientific and analytical works present a fairly wide palette of definitions of the concept of “artificial intelligence” and approaches to understanding its essence - from identification with robotics to the perception of artificial intelligence as an innovative development of science and technology to design intelligent machines and intelligent computer programmes [3].

The national professional literature states that artificial intelligence studies intelligent behaviour (in humans, animals and machines) and tries to find ways to model such behaviour in any type of artificially designed mechanism. Even though the term is more than half a century old, there is no single interpretation of it currently. Scientists define artificial intelligence in different ways, depending on their perspective, working to design systems that: think like people; think rationally; act like people; act rationally. As a working definition, scientists propose the following: artificial intelligence is one of the areas of computer science, the purpose of which is to develop hardware and software tools that allow a non-programmer user to set and solve their, conventionally considered intellectual, tasks by communicating with a computer in a limited subset of natural language. Therewith, artificial intelligence has always been an interdisciplinary field, being both science and art, technology and psychology [11]. The ability to self-learn, self-improve and self-develop, and autonomy from

humans in decision-making is the core of the entire architecture of artificial intelligence.

According to the Concept for the Development of Artificial Intelligence in Ukraine, approved by the Order of the Cabinet of Ministers of Ukraine dated December 2, 2020 No. 1556-r, artificial intelligence is an organised set of information technologies, with the help of which complex tasks can be performed by using a system of scientific research methods and algorithms for processing information received or independently established during work, and developing and using own knowledge bases, decision-making models, algorithms for working with information and determine methods of achieving the identified objectives; the field of artificial intelligence is an area of activity in the field of information technology that provides the establishment, implementation and use of artificial intelligence technologies [6].

The existing variety of opinions on the nature of artificial intelligence can be reduced to the following types: 1) “weak artificial intelligence” (“narrow artificial intelligence”, “limited artificial intelligence”) is an artificial intelligence designed to solve one or more tasks that humans perform or can perform. Recently, “weak artificial intelligence” has been mostly referred to as “applied artificial intelligence”; 2) “strong artificial intelligence” (“general artificial intelligence”) is artificial intelligence designed to solve all tasks that humans do or can do; 3) “artificial superintelligence” is an intelligence that is significantly smarter than the best human intelligence in almost every area, including scientific creativity, general wisdom and social skills, which can have consciousness and subjective experiences [12]. In addition, general artificial intelligence should have such cognitive functions as the ability to independently define the purpose of its functioning, even not just a purpose, but a set of purposes, both interrelated and interdependent, and completely autonomous. And in the process of achieving the purpose(s), the general artificial intelligence, like a human, should be able to dynamically change the content of the purpose(s) due to changes in both internal and external circumstances. For example, these changes may be associated with restricted access to the necessary resources: computing, energy, raw materials, financial, or with changes in the parameters of component products, a sharp change in weather conditions, the occurrence of a natural disaster, refusal to cooperate, etc. In addition, general artificial intelligence should have such cognitive functions as self-learning, self-organisation and self-transformation to the extent of approximation to the corresponding cognitive functions of humans, which will be necessary to achieve the purpose. Essentially, the implementation of cognitive

functions by general artificial intelligence should occur in the same way as it happens in humans in similar circumstances [10]. Artificial intelligence is characterised by the following features: 1) perception of the environment and the complexity of the real world; 2) information processing: collecting and interpreting initial data; 3) decision-making, including reasoning, learning and taking action; 4) achieving defined purposes [13].

Highlighting the nature and potential of artificial intelligence technologies, it is necessary to emphasise the discussion on the legal status (or regime) of robots and artificial intelligence in general. Thus, in the present conditions, there are already several legal issues regarding:

- recognition (or non-recognition) of robots as subjects of legal relations, and, accordingly, granting (or not granting) them legal personality (indicative is the fact that at the end of 2017, the human-like robot Sophia, developed by the Hong Kong company Hanson Robotics, was granted the citizenship of the Kingdom of Saudi Arabia);

- recognition of copyright works (for example, in 2016, the book “The Day a Computer Writes a Novel”, written by artificial intelligence, was short-listed for the Japanese literary prize named after Hoshi Shinichi);

- compensation for damage caused by robots (for example, damage caused by an error in the operation performed by a robot or a traffic accident caused by an autonomous vehicle) [14].

The above is only an indicative list of legal issues that may arise in connection with the recognition of the legal status of artificial intelligence. Therewith, the solution to this issue is already urgent for Ukraine. One of the first comprehensive attempts to regulate the status of artificial intelligence was made by the European Union, which adopted the agreed text of the European Parliament Resolution “Civil law rules on robotics” (2015/2013 (INL)) of February 16, 2017. The main issues raised in this Resolution are the issues of ethical provisions on robotics and artificial intelligence, granting rights to robots and artificial intelligence, the establishment of the European Agency for Robotics and Artificial Intelligence, resolving the issue of liability for damage caused by robots and artificial intelligence, and the proposal among the already known categories of subjects of legal relations (individuals and legal entities) to establish a new one - “electronic person (personality)”, which will have its specific rights and obligations [15; 16].

According to O.E. Radutnyi, granting artificial intelligence with the legal status of “electronic person (personality)” should not be objected to and rejected

in the field of criminal law and other relations. After all, it is common to assign to a legal entity (which is a virtual entity) the legal status of a subject of numerous legal relations, and, in addition, the possibility of applying criminal law measures to it [15; 16]. The opposite position on this issue is expressed by N.S. Martsenko believes that the understanding of artificial intelligence and robot as a subject of civil relations seems inappropriate and can cause uncertainty in the law. Using the term “electronic person” in the regulations of the European Union is premature since the spread of this concept in the field of law does not provide a holistic legal understanding of their legal status, civil liability, protection of users' rights, data protection, etc. In addition, the recognition of artificial intelligence and robots as a subject of legal relations means the extension of provisions on ensuring their rights (since all subjects to participate in civil and legal relations must have their own will and free choice of ways to implement their behaviour from the standpoint of the principle of dispositive and have rights and obligations equal to other participants in legal relations – through the prism of the requirements of the principle of equality). It is more appropriate to understand robots and artificial intelligence as an object of civil legal relations. In addition, the regulation of civil liability at the level of consumer relations gives grounds to understand artificial intelligence as a product (commodity). Using artificial intelligence technologies in such areas as medicine or public administration prompts reflection on the extension of the legal regime of the source of increased danger to this object of civil rights. It will contribute to better protection of the rights of users of artificial intelligence technologies [17]. Similar opinions on artificial intelligence as an object of legal regulation or an object of law are shared by other legal scholars.

Thus, the general prospects for reforming the legal regulation of using artificial intelligence and its liability for actions can be grouped around three main approaches (hypotheses): firstly, the positioning of robots with artificial intelligence only as objects of legal relations; secondly, the consideration of robots with artificial intelligence exclusively as separate subjects of legal relations, with this approach, robots with artificial intelligence are perceived as independent subjects of legal relations with the ability to independently and sufficiently realise and assess the significance of their actions and the actions of others; thirdly, the characteristics of robots with artificial intelligence as individual subjects of legal relations and their possible objects [18; 19]. Therewith, it is necessary to distinguish between the concepts of “robot” and “artificial intelligence”, as the first one

is perceived as an object of the material world with the corresponding appearance and several external features that can identify it. Artificial intelligence, considering its most common definition as an ability, is an abstract concept that cannot be recognised by the senses. Therewith, it is artificial intelligence that provides the robot with the properties that are usually used to describe it, namely: intelligence, the ability to analyse and process information and to perform the tasks for which it is programmed [12]. The main task of domestic national policy in the field of legal regulation of artificial intelligence is to ensure the rights and freedoms of participants in relations in the field of artificial intelligence, and the development and implementation of artificial intelligence technologies in compliance with ethical standards [6].

Artificial intelligence technologies are widely used in the legal sphere and legal practice. Thus, in early 2017, JPMorgan announced using Contract Intelligence software, which is designed to analyse legal documents in a few seconds, which previously required 360 thousand hours of working time. Law firm Baker & Hostetler has announced that it is hiring artificial intelligence ROSS to handle bankruptcy cases, which were previously handled by almost 50 lawyers. The artificial intelligence ROSS, developed on IBM's Watson cognitive computer, will monitor the legislation and legal situation around the clock, can read and understand language, make hypotheses, research and then generate answers with proper references and citations, learn from its own experience, etc. Scientists from the University College London and the University of Sheffield have created a “computer judge” that predicts the decisions of the European Court of Human Rights with an accuracy of 79% [15; 16].

Currently, there are hundreds of robot lawyers in the world – programs that perform routine actions, and template operations for drafting applications, lawsuits, letters, contracts, etc. However, algorithms cannot completely replace people yet - they can only help them by providing more information for decision-making. In all areas where regular actions are required, artificial intelligence is actively replacing human lawyers, saving their time and energy to perform more creative tasks [4].

Artificial intelligence is expected to help improve judicial practice: identify typical legal situations, develop algorithms of actions (e.g., determine the warranty period or limitation period, establish the type of violation of subjective rights and freedoms, choose a method of protection, etc, are not covered by the subject matter of the dispute or do not reflect the method of protection chosen by the plaintiff, or are not provided for by the relevant rule of substantive

law to which the plaintiff refers, to identify atypical court behaviour under normal circumstances, the so-called “anomalous” court decisions, to process a significant amount of information, to prepare draft court decisions, etc; [16]. Legally and possible and relevant areas and forms of involvement of artificial intelligence technologies in legal practice, in particular in judicial proceedings, are as follows: information and documentary support of the legal practice, including automated intellectual classification of legal documents, development and documentary management of cases, development of projects for solving various legal problems through using artificial intelligence technologies by attracting and analysing databases; intellectual expert and analytical support of legal practice by comparing the provisions of law by artificial intelligence technologies, comparing regulations to determine their hierarchy, establishing the provisions and acts of higher legal force from those that are compared; generation and issuance of expert opinions within the framework of forensic examination or expert opinion (use of knowledge bases, electronic expert systems, automated systems for supporting legal decisions based on artificial intelligence); facilitating decision-making within large volumes of heterogeneous tasks under complex conditions of uncertainty, based on inaccurate, insufficient or ill-structured information [5].

According to M.V. Selivanov, modern information technologies can significantly improve the predictability of court decisions and their reliability, assist the judge in the trial, reduce the workload of an individual judge and reduce the risk of judicial errors. An e-court – is a court where logical algorithms will resolve the case quickly, in fact, will eliminate corruption risks and human errors [20]. More restrained considering possible threats assess the trends and prospects of using artificial intelligence in advocacy S.O. Ivanitsky, who believes that technology affects, but is unlikely to change human nature. The possibilities of Legal Tech – a new branch of legal business, established at the intersection of law and technology – will reduce the demand for low- and medium-qualified legal professionals, and in some areas will completely replace them. Some areas of legal practice will disappear, but new horizons will inevitably appear, as all aspects of life become more complex. The legal landscape of the future will retain the place of deeply specialised law firms and bureaus with a distinct concept and recognition among competitors, and lawyers who can provide unique, specific services and solve problems, related to the exceptional complexity of the factual circumstances of the case (a large amount of data, their confusion, etc.) or its legal assessment (difficulties

of legal qualification, conflicts and gaps in legislation, etc.), or require special trust or individual communication skills (compassion, understanding and anticipation of the client's requirements, etc.). It is rather difficult to automate functions that require creative thinking, emotional intelligence and social sensitivity. Considering this, the beginning of the era of artificial intelligence in the legal sphere will not be fast, and human potential will be at the forefront of advocacy for a long time [21].

The emergence of artificial intelligence should contribute to the solution of complex, priority legal tasks, for example, the implementation of significant and progressive legal changes (transformations of the legal system, the system of law, the system of legislation, etc.) It is rather promising to use artificial intelligence technologies as a tool for legal reform to increase the efficiency of its implementation. In this context, M. Tegmark's judgments that humans are social animals that have conquered all other species and conquered the Earth due to their ability to cooperate are correct. Authors have developed laws to encourage and facilitate cooperation, thus, if artificial intelligence can improve the legal and governmental systems, it will allow cooperation more successfully than ever before and perform at its best [22]. Artificial intelligence can make the legal system fairer and more efficient if they learn how to design transparent and impartial robot judges. Therewith, the laws require rapid updating to remain abreast of artificial intelligence, which raises difficult legal questions regarding privacy, liability, and regulation [22].

According to Zh.O. Pavlenko, transformations (social and legal reforms) in society require revision of legislation. In turn, the latter requires a change in attitude to law-making and law enforcement activities, and this requires reliable and efficient tools. It is essential to develop a systematic approach to setting and solving the tasks of transforming the national legislation, which would not be limited to the adoption of particular legislative acts, amendments or additions to the existing ones. The eclectic approach that developed in Ukraine proved to be unacceptable. As a result, the instability of legislation is growing, and political, economic and legal conditions of legislative activity are becoming more complicated. One of the ways to improve the legislative process may be the active application of the achievements of modern science and technology within the framework of knowledge engineering in jurisprudence. The legislation of Ukraine contains a lot of contradictions, which concern public authorities at all levels, specialists involved in the legislative process, and legal practitioners. It is urgent to establish a system that would determine at an early stage of drafting a regulation

whether it complies with the Constitution of Ukraine and current legislation, and identify internal contradictions of the regulation itself. There is a demand for a technology that would provide, firstly, a semantic search of regulation in the database; secondly, automatically generate different versions of the same regulation, and the text of the document according to the template and details; thirdly, identify contradictions in the texts of regulations. The development of the terminology of the legislative system is not an easy task, as it is due to the complexity of a precise definition due to the combination of features of obvious categories and concepts. In addition, many people are involved in the development of regulations. By applying the experience of developing large software products in the field of legislative activity, it is expected to improve the quality of draft laws. However, Zh.O. Pavlenko stresses that currently, it is about improving the quality, not about generating the draft law by software, since the legislative process is a task of the highest level of complexity, in the process of which the highest creative functions of human thinking are implemented. Using artificial intelligence methods in jurisprudence is not limited to lawmaking. In legislative activity it is necessary to use not only ready-made information (data), a professional lawyer requires knowledge, i. e. the laws of the subject area, which will allow them to successfully solve their professional tasks. Obtaining the knowledge of specialists and providing it to all users of intelligent systems is one of the tasks of the field of artificial intelligence and jurisprudence [23].

O.E. Radutnyi's opinion on a different approach to lawmaking in the context of legal reform deserves attention. In particular, if the development of regulations is not entrusted to specialists (legal scholars and legal practitioners), the solution to the problem may be in using the capabilities of artificial intelligence. Currently, no human can track all system connections the way artificial intelligence can. In the process of law-making, this ability will allow for avoiding systemic mistakes within the industry and in cross-sectoral areas. To entrust artificial intelligence with the development of new regulations and/or verification of existing ones and preparation of amendments to them, the latter must be capable of complex processing of significant amounts of information obtained from various sources, to identify systemic correlations both within one industry and to establish interdisciplinary links, to have the ability to self-learn, in particular, to accumulate experience, generalise, find non-obvious logical chains, draw specific conclusions, and to plan. Artificial intelligence is already endowed or will soon have such properties that in total exceed the mental abilities of any person: the

ability to abstract thinking; perception, and recognition of all signals of the external world (in contrast, a person, for example, does not perceive ultrasound and infrasound, in general, what they perceive with their eyes is only about 2% of the full electromagnetic range); a powerful theoretical base, knowledge of all provisions of the current legislation and awareness of decisions on any court cases regardless of industry; ability to spread and self-preservation; solving a problem by brainstorming with the involvement of many copies of oneself; strategic thinking, the ability to develop and predict various options in advance; ability to deduction and induction, analysis and synthesis; ability to model; ability to work efficiently under conditions of uncertainty and probability; use of available information in the most appropriate and optimal way; awareness of the principles of one's work and thus the ability to improve oneself (the first version establishes an improved version of itself and so rewrites the programme indefinitely), etc. Providing the person ("electronic person (personality)"), who prepares the draft law, with such cognitive abilities and properties with the simultaneous programming of the function of vetoing unacceptable proposals, will allow reformatting the current legislation, in particular, to harmonise it with other legal systems, to avoid mistakes [15; 16].

To use artificial intelligence in legislative activity, it will be necessary to teach it to substantiate the social conditionality of a specific provision, to consider logical rules (identity, non-contradiction, excluded third, sufficient reason, etc, techniques and rules of rule-making technique to objectify a provision of law as a text, the content of which should be coordinated at the level of systemic links of the structural parts of the provision of law, within the institution of law, a branch of law, system of law in general in inseparable unity with the fundamental constitutional principles and international obligations of Ukraine. Based on the results of the work of artificial intelligence, the deputy corps will be provided with a draft law of the best form and content, which will already be agreed upon the law enforcement (depending on the subject of the future application of a specific rule of law) and scientific (compliance with fundamental doctrinal knowledge) levels. Legislators will be considered only the everyday aspect of the bill, which exists at the level of legal consciousness of an ordinary citizen and representative of the people and corresponds to the political situation in society [15; 16].

One of the areas of artificial intelligence use in the process of legal reform is digitalisation ("digitalisation" – transition to digital technologies, conversion of any information or information processes into digital format) of legal information. According

to Y.V. Baulin and V.Y. Tatsiy, a wide range of scientific problems is in the plane of digitalisation of the legal system in Ukraine. Obviously, in the context of reforming the national criminal legislation, the digitalisation of the three codes on liability for public offences (Criminal Code, Code of Misdemeanors, Code of Administrative Offenses) is only part of the national program of digitalisation of the entirely legal system. Therewith, the purpose of digitalisation of the codes is to help, first of all, the subjects of law application (detective, investigator, prosecutor, judge, defence counsel, probation officer, colony and executive service employee, etc) to decide when solving a problem with using artificial intelligence. A prerequisite for this is the construction of codes on a unified methodological foundation, which includes: a unified structure (for example, books, sections, subsections, articles, paragraphs, subparagraphs), terminology, typification (classification) of violations and their legal consequences, unification of various registers and other materials wherever possible, etc. Due to digitalisation, all the necessary legal information (laws, international and European acts, national and foreign practice, scientific achievements, the state of law and order, etc.) is systematised, processed and analysed to solve the problem, recommendations on possible solutions with a forecast of the consequences of each proposed solution, monitoring of the implementation of the decision and adjustments based on the consequences of its implementation, etc. Digitalisation provides wide opportunities for the establishment of automated workplaces for investigators, prosecutors, lawyers, judges, other stakeholders and public officials, for the deployment of relevant scientific research on a new information base, political decision-making, etc.

## ■ Conclusions

Based on the above, the following conclusions can be made:

1. The spread of artificial intelligence technologies in the modern world is gaining momentum. Pretty soon, people will not be able to imagine life without artificial intelligence systems, which are probable to become the largest innovative project in the history of human civilisation. Currently, there is no unified approach to understanding the nature of artificial intelligence in the technical sphere, which causes some uncertainty in the legal, social and moral and ethical spheres. There is a discussion between different groups of legal experts on the legal aspects of the advantages, benefits, threats and risks of artificial intelligence development; possible recognition of the legal personality of robots with artificial intelligence; the necessity to develop

new mechanisms for the implementation of legal responsibility and compensation for damage in the context of artificial intelligence. Evidently, it is difficult or almost impossible to stop the development of artificial intelligence. However, the establishment, implementation and use of artificial intelligence should undoubtedly be socially oriented and be in the interests of human security, preservation of personal space, will and self-awareness. Therewith, the development and use of artificial intelligence systems should be performed only subject to the rule of law, fundamental human and civil rights and freedoms, democratic values, and ensuring appropriate safeguards during the implementation of such technologies.

2. In recent years, examples of the implementation of artificial intelligence systems in various spheres and segments of social activity have been appearing intensively, and most of them are positively impressive. The fundamental and indisputable advantage of artificial intelligence technologies is that decisions are made and implemented in real-time based on the collection and processing of a huge amount of data; identification of all subjects and objects involved in the processes; application of special mathematical algorithms and robots. Using artificial intelligence technologies in the legal sphere and legal practice is an important factor in the development of the legal system, ensuring the rights and freedoms of men and citizens. The main areas of implementation of artificial intelligence systems in the legal sphere are using various software (e.g., databases, registers, smart contracts) that support lawyers by relieving them of routine operations; application of advisory programs based on artificial intelligence (e.g., chatbots, online services), which provide access to legal advice to the general public by providing legal services in an automated manner; prevention of socially dangerous phenomena by analysing available data using artificial intelligence, in particular electronic expert systems - programmes that simulate the intellectual activity of lawyers in a particular field based on information about the subject area and algorithmic principles of solving standard professional situations; introduction of artificial intelligence technologies into the judicial system (e-justice, e-court), etc.

3. Artificial intelligence is an important tool of legal reform, the newest component of its implementation technology, and a means of improving the efficiency of implementing qualitative legal changes in the modern conditions of the information society. The potential of artificial intelligence technologies contributes to the solution of complex, priority legal tasks, and the implementation of significant and progressive legal

transformations (innovations in the legal system, the system of law, the system of legislation, etc) due to its ability to make rational legal decisions, as appropriate to the circumstances of legal development, in real-time. Using artificial intelligence in legal reform allows for significantly expanding the horizons of legislative activity, improving the legislative process and diversifying the legislative technique. Legal reform should be implemented using the latest information technologies and with consideration for the future application of the amended (transformed) law in the context of digitalisation, which, for

example, will allow unifying legal terminology, making references to “related” other provisions of a particular regulation, etc. There is a necessity to introduce digitalisation in legislative activity, to codify the legislation of Ukraine at a higher level than it was before. New domestic legislation should be developed using modern achievements of legislative technique, which will increase its accessibility for perception and understanding by the population and significantly reduce the possibility of errors or abuses in the process of its implementation by various subjects of law.

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## Штучний інтелект як інструмент правової реформи: потенціал, тенденції та перспективи

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■ **Анотація.** Метою наукової статті є узагальнення та розвиток теоретичних знань щодо потенціалу, тенденцій і можливих напрямів використання технологій штучного інтелекту як інструменту правової реформи, засобу підвищення ефективності її реалізації. Методологічну основу наукового пошуку становить сукупність принципів наукового пізнання (історизм, науковість, усебічність, плюралізм), методологічних підходів (діяльнісний, системний, компаративний, аксіологічний), загальних методів мислення (аналіз, синтез, абстрагування, узагальнення), філософських (діалектичний, метафізичний, герменевтичний, гносеологічний), загальнонаукових (історичний, синергетичний, функціональний, структурний) і конкретно-наукових (формально-юридичний, порівняльно-правовий) методів, застосування яких забезпечило обґрунтованість і вірогідність результатів дослідження природи штучного інтелекту як новітнього інструментарію технології здійснення правової реформи в сучасних умовах. Наукова новизна публікації полягає в тому, що вперше висвітлено потенціал технологій штучного інтелекту як важливого інструмента правової реформи, новітнього засобу підвищення ефективності її реалізації завдяки можливості штучного інтелекту приймати раціональні правові рішення, максимально адекватні обставинам правового розвитку, фактично в режимі реального часу, зокрема через розширення горизонтів законодавчої діяльності, удосконалення законодавчого процесу й урізноманітнення законодавчої техніки шляхом діджиталізації (цифровізації) правової інформації; удосконалено характеристику сучасного стану, тенденцій та основних векторів упровадження штучного інтелекту в правову сферу та юридичну практичну діяльність; набули подальшого розвитку наукові уявлення про доктринальні й нормативні підходи до розуміння природи штучного інтелекту, а також дискусійні питання та ймовірні загрози й виклики, пов'язані з правовим регулюванням створення, упровадження та використання технологій штучного інтелекту. Висновки наукової статті зводяться до таких положень: поширення технологій штучного інтелекту в сучасному світі набирає дедалі більших обертів. Доволі швидко людина не зможе уявити життя без систем штучного інтелекту, що, найімовірніше, можуть стати наймасштабнішим інноваційним проектом за всю історію людської цивілізації. Досі не сформовано єдиного підходу до розуміння природи штучного інтелекту в технічній сфері, що зумовлює певну невизначеність у правовій, соціальній і морально-етичній галузях. Існує дискусія між різними групами експертів-юристів з приводу правових аспектів розвитку штучного інтелекту, можливого визнання правосуб'єктності роботів зі штучним інтелектом, необхідності розроблення нових механізмів реалізації юридичної відповідальності та відшкодування шкоди в умовах використання штучного інтелекту. Останніми роками інтенсивно з'являються приклади реалізації систем зі штучним інтелектом у різних сферах і сегментах соціальної активності, що здебільшого позитивно вражають своїми результатами. Використання технологій штучного інтелекту в правовій сфері та юридичній практичній діяльності є важливим чинником розвитку правової системи, забезпечення прав і свобод людини та громадянина. Потенціал технологій штучного інтелекту може сприяти розв'язанню складних, першочергових правових завдань, здійсненню істотних і прогресивних правових перетворень (нововведень у правовій системі, системі права, системі законодавства тощо). Застосування штучного інтелекту під час правової реформи дає змогу суттєво розширити горизонти законодавчої діяльності, удосконалити законодавчий процес й урізноманітнити законодавчу техніку

■ **Ключові слова:** інформаційні технології; штучний інтелект; технології штучного інтелекту; діджиталізація; правове регулювання; правовий розвиток; реформа; правова реформа; законодавча діяльність