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## Chapter

# Information and Communication Systems Including Artificial Intelligence and Big Data as Objects of International Legal Protection

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## Abstract

The objective of this study is identifying prospective for international legal protection of information and communication systems including artificial intelligence on the universal and regional levels, and analysis of legal instruments for protection of artificial intelligence and Big Data in the context of regulation of relations in the global information society. A complex of general scientific and philosophical methods, including the logical, comparative-legal, formal-legal, systemic-structural, and problematic-theoretical methods, as well as methods of analysis and synthesis, generalization and description were used in the research. It was found that the existing international agreements in the field of intellectual property protection take no account of the particular features of protection of complex objects. Complex objects comprise information and communication systems including artificial intelligence and Big Data. There is an objective necessity to establish a legal regime for complex objects on the universal level. The findings can be used in activities of international organizations in execution of their functions of unification and harmonization of the international information law.

**Keywords:** information and communication systems, international legal protection, artificial intelligence, big data, databases, computer programs

## 1. Introduction

The international protection of intellectual property began to take form in the late nineteenth century. Characteristically, that was the time when the stable basis of international cooperation in the field of intellectual property was established. With regard to copyright, the Berne Convention for the Protection of Literary and Artistic Works was adopted in 1886, and protection of patent rights was introduced by the Paris Convention for the Protection of Industrial Property in 1883.

The development of intellectual property protection on the universal level can be described as conservative. With new technologies emerging, the existing international treaties were revised only slightly to adapt to the regulation of new technologies. For example, when the Berne Convention was revised in 1908 in

Berlin, the range of objects of protection was extended to works of choreography, entertainments in dumb show, cinematography, architecture, and photography.

Until the middle of the twentieth century, the influence of scientific and technical progress on the development of copyright and patent law was very insignificant. The advent of radio and television caused significant change in the system of related rights. There appeared new objects of related rights, namely phonograms and broadcasts.

In the twentieth century, scientific and technical progress caused radical changes in the contemporary world. The system of social relations has changed. The development of information and communication technologies (ICTs) has affected all the aspects of social life including the economy, politics, welfare sphere, and culture.

Modern information technologies cannot develop within the borders of a particular state. They are transborder by their nature.

By the present time, the information society theory has been reflected in a number of international documents. These include the Okinawa Charter on Global Information Society of July 22, 2000, the Declaration of Principles "Building the Information Society: A Global Challenge in the New Millennium", and the Plan of Action of the World Summit on the Information Society of December 12, 2003.

There is no consensus in the doctrine about the moment when the theory of an informational society appeared. Matterlart [1] has identified early beginnings of the information society theory. His research of information society theories begins from Leibniz (1646–1716) who was the first to put the set of numbers in order and give it a strict hierarchy. He is also the author of the idea of a universal mathematical language, the so-called binary number system, which was later used in cybernetics.

Without dismissing the achievements of the thinkers of the seventeenth to nineteenth centuries, we must note that the first sociological studies of the information society were made in the 1960s.

The task of systematization of ideas about the information society is complicated by the fact that researchers have often made assumptions about ideal information society and social forecasts, the reliability of which is too early to discuss.

For demonstrating the diversity of information society theories, we will use the classification by Webster [2]. He identified five groups of information society theories, namely technological, economic, occupational, spatial, and cultural.

The diversity of information society theories is explained by the fact that there are many factors and phenomena interacting in the information society.

In our view, contemporary relations in creation, distribution, receiving, storage, transmission, and destruction of information are characterized by a broad range of subjects. We agree with Masuda who claims that "the most advanced stage of the information society will be the high mass knowledge creation society, in which computerization will make it possible for each person to create knowledge and to go on to self-fulfillment" [3]. Individuals and associations of individuals, such as legal entities, social associations, etc. are increasingly becoming subjects of information relations. This is due to the fact that ICT allows direct communication between people without regard to state borders. Thus, it becomes possible for nonstate subjects to participate in information relations, which does not exclude the participation of states in such relations.

In the information society, the protection of intellectual property is a key factor for its development.

The Okinawa Charter on Global Information Society stated that protecting the intellectual property rights for information technology is important for promoting IT-related innovations, promoting competition, and widespread introduction of new technologies. The Charter welcomed the cooperation within intellectual property authorities and further discussion of experts in this area. It should be

noted that the Charter provided protection of intellectual property for information technologies, an object not covered by the 1886 Berne Convention for the Protection of Literary and Artistic Works and the 1883 Paris Convention for the Protection of Industrial Property.

At present, the development of relations in the global information society is facing the problem of insufficient legal protection of scientific and technical achievements.

The problems of intellectual property protection are considered in fundamental studies on information technology law including Bainbridge [4], Campbell and Ban [5], Rowland and Macdonald [6], Lloyd [7], and Murray [8].

At the same time, there are no monographic researches on problems of international legal protection of information systems as complex objects.

## 2. Concept headings

The objective of the research is identifying prospective for international legal protection of information and communication systems including artificial intelligence on the universal and regional levels, and analysis of legal instruments for protection of artificial intelligence and Big Data in the context of regulation of relations in the global information society. In order to achieve the objectives of the research, it is necessary, first of all, to analyze the existing systems for protection of computer programs and databases.

In the legal doctrine, publications on the use of artificial intelligence in law enforcement and the legal profession first appeared in the 1980s [9, 10].

At present, there are hundreds of publications on the matter of legal problems associated with artificial intelligence, and discussions concerning issues of legal capacity and liability relating to problems of the theory of law, as well as research of branches of national law.

The contribution of international law experts in the considered problems is not as significant. In particular, there is a very in-depth study on international humanitarian law [11]. The doctrine has analyzed matters of the Big Data impact on human rights [12] and the connection between Big Data and progressive development of international law [13].

The questions that must be answered in this study are as follows. What legal protection on the universal level must be provided to information and communication systems? What are information and communication systems as objects of international legal regulation?

The object closest to artificial intelligence, which is protected on the universal level, is computer programs.

The legal protection of computer programs appeared before the electronic communications technology and has developed step by step. In the early 1960s, the legal protection of software was provided on the national level. Because computer programs were regarded as unique, since the production and use of computers were not yet a mass phenomenon, it was the patent protection of software that was considered the basic method at the first stage of development of the legal regulation of software and database protection. The patent protection of software had been used in the USA since the 1960s. Initially, the US Patent and Trademark Office refused to patent computer programs, regarding them as mental objects. However, in 1968, the Court of Appeals made conclusions on the patentability of algorithms, computational techniques, and code building methods in several judgments.

In the 1960s and 1970s, the patent protection of software was completely adequate to the achieved level of technical development and applied in all countries



with a sufficiently high level of computer technology development. In particular, in Germany, the patent protection of software appeared in 1973 after a number of relevant judgments by the Federal Patent Court.

Since the second half of the 1970s, the next stage of development of the legal protection of software began. The approach to the content of the legal protection of software changed significantly. Because computer technologies gradually became more widespread, and computers penetrated all the areas of social life, some computer programs no longer met the requirements of novelty. Change in the approach to the legal protection of software occurred on the universal level. In 1978, the Advisory Group of Non-Governmental Experts of the International Bureau of WIPO developed the Model Provisions on the Protection of Computer Software.

The Advisory Group of Non-Governmental Experts of the International Bureau of WIPO began the development of the Model Provisions on the Protection of Computer Software in 1971 when patent protection was applied widely on the national level. However, the solution that was later proposed by WIPO was significantly different from the existing practice in particular states. The experts remarked that the Model Provisions were not proposed to states as a single model act. The principles of the Model Provisions could be embodied in parts in copyright and patent law and in competition law.

However, the provision that the principles of the Model Provisions could be embodied in various legal institutions did not imply the possibility of integral protection of software. From the contents of Sections 3 and 4 of the Model Provisions, it followed that software must be protected by copyright law of the relevant state. In particular, Section 3 of the Model Provisions stipulated that software must be original in the meaning of copyright of the relevant state and contained a general originality requirement, namely that software must be a result of its creator's own intellectual efforts. According to Section 4, it was the form and not the idea of software that must be protected.

It is characteristic that in 1978, Professor Herbert Simon won the Nobel Premium in Economics for his pioneering research in the decision-making process within economic organizations, which contains the theory of bounded rationality, a key concept for artificial intelligence.

This overview of history does not seem out of place in view of the practice of national courts on the patentability of artificial intelligence, which was summarized by Hashiguchi [14].

In the USA, an example of recognition of the patentability of a method for automatic animation of synchronization of the lips and facial expression in computer graphics is the case of *McRO, Inc. v. Bandai Namco Games America Inc.* The federal court found that this method is patentable because it does not lead to an abstract idea. The court took account of the specifics of the automatic method, which covered individual operations with specific characteristics. The method comprising individual operations was designed for the transfer of information in a specific format, which was used for creating characters. Features of the industrial applicability of this invention were also taken into account. Firstly, it is not just a methodology as such that is used. Secondly, the invention could not be used without using a computer technology. Overall, the court concluded that processes which automate the tasks performed by people are patentable.

The US courts are guided primarily by the criterion of the utility of the invention with elements of artificial intelligence.

Boards of Appeal of the European Patent Office are bound by the provisions of Article 52 of the European Patent Convention of 1973. Discoveries, scientific theories and mathematical methods, esthetic creations, schemes, rules and methods for performing mental acts, playing games or doing business, and programs

for computers and presentations of information are not considered inventions. Therefore, a method or a program may not be patented, but technical devices that use them may. The Board of Appeal recognized a server for automatic document collection and a device for creating three-dimensional models as patentable.

Given the experience of the legal protection of computer software, it is unlikely that the idea of patentability of inventions with elements of artificial intelligence will be supported on the universal level.

The object closest to Big Data, which is protected on the universal level, is databases.

The development of intellectual property protection on the universal level can be described as conservative. With new technologies emerging, the existing international agreements were revised only slightly to adapt to the regulation of new technologies.

The need for compliance of the legal means for protection with the features of protected objects was manifested more clearly when the Directive 96/9/EC of the European Parliament and Council on the legal protection of databases of March 11, 1996, was adopted. This Directive provided a sui generis right. A prerequisite for this right is the “substantial investment”, which is required for creating the objects of the new right. The sui generis right to databases is protected for 15 years and includes exclusive control of the database creator over the recovery and reuse of its contents.

In the legal doctrine, the appearance of the sui generis right is associated with the problem of the legal protection of nonoriginal works. According to Jehoram, copyright is not an appropriate way to protect databases. This is why the Directive on Databases provides sui generis protection for those databases which are not original. [15].

Without consideration of the EU experience, in the WIPO Copyright Treaty of December 20, 1996, it is stated that computer programs and databases are protected by copyright. According to Article 1 of this Treaty, it is a special agreement within the meaning of Article 20 of the Berne Convention for the Protection of Literary and Artistic Works. Article 4 of the Agreement stipulates that computer programs are protected as literary works within the meaning of Article 2 of the Berne Convention. Such protection applies to computer programs, whatever may be the mode or form of their expression. Article 5 of the Treaty stipulates that databases are protected as such if they contain elements of intellectual creativity. The protection provided cannot pretend that the data and materials in the database are relevant to copyright. Provisions on the legal protection of computer programs and databases are contained in Articles 1–7 of the Treaty. Matters of legal protection are regulated in the Treaty in the most general form, for which reason the content of the Treaty is not satisfactory enough for the necessities of the regulation of the protection of software and databases on the universal level.

At the same time, national laws (e.g., in France, Switzerland, and Germany) provide copyright protection for databases.

Stipulation of the protection of computer programs and databases in the laws of a number of states in a form not specific enough has led to a number of problems with the implementation of such legal provisions. There is no doubt that the terms “publication” and “copying” as applied to computer programs and databases have special features that distinguish them from traditional copyright objects. If there are no definitions of such terms in the law, their meaning can only be clarified in view of the existing practice of judicial and administrative authorities of particular states.

In regard of law enforcement difficulties, of significant interest is the practice of the US Copyright Office, an analysis of which was made by their officer Oler [16]. The Copyright Office registered databases as “books” in class A, but the originality requirements for registration were not as strict. The Copyright Office regarded

publication as reproduction of the program in a form that is perceivable or accessible for the human eyes. The date of the first publication was traditionally understood as the date when the program was sold or offered for sale to consumers. As for copying, copies of the program could be typewritten or contained on floppy disks or in interfaces. The main criterion for copying is creation of copies in a language that can be understood by humans.

At present, one should take account of the fact that functions of programs and databases have changed in the 1980s–1990s. Computer programs and databases are becoming all the more important not just as individual technical phenomena but as crucial components of computer networks, which are a qualitatively new technical phenomenon. Therefore, the legal provisions on the protection of software and databases in the laws of various countries should be specific and, to the extent possible, similar.

The WIPO Copyright Treaty of 1996 and the TRIPS Agreement contain quite concise regulations in respect of computer programs. For example, Article 4 of the WIPO Treaty and Article 10 of TRIPS stipulate that computer programs are protected as literary works in the meaning of the Berne Convention.

At the same time, the development of the provisions of the Berne Convention in these instruments is different. The special features of computer programs are taken into account only in Article 11 of the TRIPS Agreement. In relation to, at least, computer programs, a Party should grant authors and their assignees the right to authorize or prohibit public commercial rental of originals or copies of their copyrighted works. This obligation does not apply to commercial rental when the program itself is not the main object of rental.

The WIPO Treaty of 1996 regulates the protection of computer programs in greater detail. The right of rental is stipulated by Article 7 of the Treaty. However, in order to understand the scope of the legal protection of computer programs, one should take account of the Agreed Statements concerning the WIPO Copyright Treaty related to the additional means of interpretation of this Treaty (Article 32 of the Vienna Convention on the Law of International Treaties of 1969).

Firstly, the right of reproduction, which was provided for Article 9 of the Berne Convention, and the exceptions from this right allowed by this article, are applied in the digital environment. It is understood that the storage of works in digital form in an electronic medium is a reproduction in the sense of Article 9 of the Bern Convention. At the same time, states may establish exceptions to the right of reproduction in certain special cases, provided that such reproduction does not prejudice the normal use of the work and does not unreasonably harm the author's legitimate interests. In addition, the provisions of the 1996 WIPO Copyright Treaty allow states to transfer and appropriately extend to the digital environment limitations and exceptions that are considered acceptable under the Berne Convention. Similarly, the provisions of the Berne Convention should be understood as allowing states to define new exceptions and limitations that are suitable in the digital computer network environment.

Secondly, it should be noted that copyright protection extends to expressions and not to ideas, procedures, methods of operation, or mathematical concepts as such. As a result, the form of expression of the program is protected.

Thirdly, it is understood that the reference to “infringement of any right covered by this Treaty or the Berne Convention” includes both exclusive rights and rights of remuneration.

Therefore, systemic interpretation of the 1996 WIPO Treaty has identified a number of harmonization provisions allowing states to provide conditions for protection of computer programs, the scope of the author's rights, and exceptions from legal protection in their national laws.



It should be noted that the approach applied in these agreements takes no account of the features of computer programs as a result of scientific and technical activity. More acceptable is the EU approach where there is a more detailed regulation for computer programs.

In particular, in the Council Directive 91/250/EEC of May 14, 1991 on the legal protection of computer programs, the rights of the author are regulated in relation to the features of computer programs. These include persistent or temporary reproduction of a computer program by any means and in any form, including downloading, transmitting, or accumulating a program and any other action and any form of public distribution, including rental of the original computer program or its copies.

The special features of the object of protection also show in the exceptions made by the Directive. Permission from the copyright holder to actions that are necessary for the use of a computer program by the legal acquirer in accordance with its intentions, including the correction of errors, is not required. Production of an outdated copy by a person authorized to use a computer program may not be prohibited by a contract if it is necessary for such use.

The person who has the right to use a copy of a computer program is given the right to view, study, or check the work of the program without the permission of right holder in order to determine the ideas and principles that underlie any element of the program.

The nature of the abovementioned exceptions is such that they aim to enable normal use of the program and make the use of the program convenient for the user. This way, a balance of public and private interests is achieved with regard to the use of protected objects.

It can be concluded from the provisions of the Directive that the provisions on the protection of computer programs are special in the framework of copyright. However, this specificity is not taken into account in regulation on the universal level.

### **3. Results**

It is obvious that artificial intelligence cannot be regarded as an “ordinary” computer program in the meaning of the abovementioned international legal acts. According to TRIPS, computer programs, whether in source or object code, shall be protected. According to the 1991 Directive, the legal protection applies to computer programs and their preparatory design material. This regulation is substantially different from the regulation in the Model Provisions on the Protection of Computer Software developed by the WIPO experts. According to the Model Provisions, protection should apply not just to the abovementioned objects but also to the program use manuals, which are not protected objects in Europe.

It is easy to notice that artificial intelligence is a more complex object by its structure. It is an information and communication system capable of synthesizing creative activity in the literary, artistic, and industrial areas.

Big data is an object close to artificial intelligence if one considers the practice of national courts on the patentability of artificial intelligence, which was summarized by Hashiguchi [14].

In the *LLC v. Microsoft Corporation* case, the invention of self-assembled databases was considered patentable. Usually, the database structure is determined by computer programs. For the LLC database, no program was needed, as the database configured itself. The District Court for the Central District of California resolved that the object is unpatentable and that it is an abstract idea. However, the federal court drew attention to the fact that the invention improves the computer capacities



in a certain way and that it is a particular technical solution of a problem in the field of software. The significant contribution of the invention to the development of computer technology was noted.

Therefore, in the terms of technology there is a “convergence” of artificial intelligence and Big Data.

It is obvious that Big Data should not be regarded as an ordinary database. It is easy to notice that Big Data is a more complex object by structure. It is an information and communication system capable of collecting and processing information and providing access to it, in particular, with engagement of artificial intelligence.

As concerns Article 2 of the Berne Convention, one can conclude that the Berne Convention does not cover complex objects of copyright. These cannot include lectures, addresses, sermons, books, pamphlets, photographic works, works of drawing, painting, architecture, sculpture, engraving and lithography, works of applied art, illustrations, maps, plans, sketches, and three-dimensional works relative to geography, topography, architecture, or science. Dramatic and dramatico-musical works, choreographic works, and entertainments in dumb show are components of a theater performance, which is a more complex object. Basically, the only complex object that is regulated by the Berne Convention is cinematographic works to which are assimilated works expressed by a process analogous to cinematography, primarily through harmonization provisions. However, the regulation of cinematographic works in the Berne Convention cannot be considered sufficient. The legal provisions are too laconic. Without prejudice to the copyright of any work that could be redone or reproduced, the cinematographic work is protected as the original work. The copyright holder of a cinematographic work has the same rights as the author of the original work. The Convention does not determine the circle of copyright holders for cinematographic works. However, in the countries of the Union, the legislation of which includes to copyright holders of a cinematographic work authors who contributed to its creation, these authors have no right to oppose the reproduction, distribution, public presentation and performance, communication to the public by wire, broadcast, or any other communication to the public, as well as captioning and duplication of the text. States implement this provision on the terms and conditions stated in the Berne Convention.

As a result, it becomes necessary to establish the legal regime for complex objects in additional act for the Berne Convention. This applies not just to artificial intelligence and Big Data but also to other results of the infocommunication revolution including websites, computer models, television format, and audiovisual format.

WIPO realizes the importance of the problem of artificial intelligence. In the address of the General Director of WIPO at the session of the Assembly of the Member States of WIPO (October 2–11, 2017), there is the following statement that should be commented: “A final area that I shall mention, where I believe that the Organization should commence to engage, although perhaps with baby steps, is the rapidly developing area of big data, the Internet of Things and artificial intelligence. The area has enormous implications and a multiplicity of dimensions, many of which lie well beyond the focus of intellectual property, and considerable care will need to be exercised to ensure that we do not stray from the mandate of the Organization. One focus of attention could be the increasing use of artificial intelligence and big data in IP administration. We have developed several applications—in translation, classification, and image-searching—and a number of IP Offices are likewise working on different applications. In order to keep IP administration abreast of the latest technological developments, it would be useful if we develop mechanisms for sharing information about our respective work, as well as for taking advantage of each other’s work and avoiding duplication.”

As we see, WIPO is just beginning to understand the new phenomena, and no steps are made concerning their regulation. The issues discussed by the Standing Committee on Copyright Law and Related Rights (SCCR) are copyright limitations and exceptions for educational institutions, libraries, and archives, and the draft WIPO Treaty to Protection Broadcasting Organizations. Matters related to new technologies are far away from the SCCR's agenda.

The Special Union for the International Patent Classification intends to use the opportunities of artificial intelligence in their activities. Its Committee of Experts examines applications of the EPO/USA and Japan on the review of the classification in the NET area; for CPC or the File Index (FI), it is planned to include new NET areas because this measure would lead to maximum benefit for the IPC. However, it should be noted that the IPC may not oblige states to provide patent protection to inventions containing artificial intelligence. States determine the legal value of the IPC for their legal systems independently. Therefore, it is too early to speak about the establishment of patent protection for artificial intelligence on the universal level.

However, the problem cannot be solved with efforts of WIPO alone. As a complex object, Big Data also requires other regimes of legal protection including protection of the privacy of individuals and legal entities and protection of trade, medical, and other protected secrets.

The privacy protection system has already been developed on the universal level. Currently, the protection of privacy has a treaty origin. Provisions for protection of privacy are stipulated in Article 17 of the 1966 International Covenant on Civil and Political Rights, Article 8 of the 1950 European Convention for the Protection of Human Rights and Fundamental Freedoms, and Article 11 of the 1969 American Convention on Human Rights.

Article 17 of the 1966 International Covenant on Civil and Political Rights stipulates that no one may be subjected to unlawful interference with his private and family life, unlawful attacks on the inviolability of his home or the secrecy of his correspondence, or unlawful attacks on his honor and reputation. Everyone has the right to the protection of the law against such interference or such encroachment. Similar provisions are stipulated by regional international treaties.

Article 27 of the Customs Code of the Eurasian Economic Union of 2017 stipulates that information from preliminary decisions on classification of goods, excluding the information that constitutes state, trade, banking, or other secret protected by law or other confidential information, which relates to the person concerned, shall be published on the official website of the Union. Article 38 of the above-mentioned document contains a rule that in the course of consultations, customs authorities and applicants may exchange information on the condition of compliance with the trade secret laws of the member states. Trade secrets can be a subject of interstate information exchange between customs authorities. During customs inspections, officials of the customs authority are entitled to request documents and information that are necessary for the customs inspection including ones that constitute trade, banking, tax, or other secrets protected by law from state bodies of the member states and receive the same from them in accordance with the laws of the member states. State bodies of the member states shall on request of the customs authority provide them with documents and information that they have with regard to registration of organizations and individual entrepreneurs, payment and accrual of taxes, accounting and reporting data or/and documents, and other documents and information that are necessary for customs inspections including ones that constitute trade, banking, tax, or other secrets protected by law, in accordance with the laws of the member states on protection of the state, trade, banking, tax, and other secrets protected by law. Experts who are engaged from other state authorities of member states must not disclose information that constitute trade, banking, tax,

or other secrets protected by law or confidential information related to participants of foreign economic and other activities in the customs field. The same obligation has been imposed on customs authorities, their officials, customs representatives, and customs carriers.

Issues of trade secret are regulated by bilateral international treaties on cooperation in the field of science, technology, and innovations, on cooperation in the field of exploration and use of outer space for peaceful purposes, on cooperation and mutual administrative assistance in customs matters, and on mutual protection of rights to intellectual property that are used and generated in the course of bilateral cooperation in the field of military technology.

On the universal scale, trade secrets are protected by TRIPS. Protection of undisclosed information is provided in the course of ensuring protection against unfair competition as provided in Article 10bis of the Paris Convention (1967). States are also expressly obliged to protect undisclosed information obtained by them as a condition of approving the marketing of pharmaceutical or agricultural products which utilize new chemical entities.

It should be noted that part 2 of this Article of TRIPS entitles the holders of undisclosed information to determine its regulation. Individuals and legal entities are given the opportunity to prevent information under their control, without their consent, being disclosed, obtained or used by other persons in a manner contrary to honest commercial practice, if such information:

- is secret in the sense that it as a whole or in a certain configuration and selection of its components is not well known and easily accessible;
- has commercial value because it is secret; and
- is subject to appropriate measures in these circumstances, aimed at preserving its secrecy, on the part of the person legally controlling this information.

However, Article 39 of TRIPS is not adapted well to tort relations in the field of information. A number of foreign states know the practice of special conflict of law regulation of defamation and privacy. Special conflict of law provisions for defamation and privacy exist in the UK, USA, Switzerland, Japan, China, and Turkey. We could not find any special conflict of law regulation of issues of trade and other secrets. Most often, the holder of the secret is interested in preventing the spread of information and prohibiting its use in the offender's business, which makes special conflict of law regulation necessary.

#### **4. Discussion**

The issue of the implementation of privacy protection in the use of Big Data has already been considered in fundamental research in information technology. Rowland et al. [17] have addressed EU acts when considering privacy problems, regarding problems of their application in the use of Big Data. However, the problems of the use of regional experience on the universal level were not covered by this study.

An identical approach to definition of personal data is characteristic of the OECD Guidelines governing the Protection of Privacy and Transborder Flows of Personal Data of September 23, 1980, and the 1981 Convention for the Protection of Individuals with regard to the Automatic Processing of Personal Data. In these documents, personal data are defined as any information related to an identified



or identifiable individual. Therefore, protected data include any information about an individual that can be identified. Such a broad range of protected information makes it possible to protect personal data in the situation of changing technologies that are used to collect and process data. In particular, protected data include PIN codes, logins, passwords, etc.

Certain provisions are applied only to individuals, information on whom is stored in a particular system. For example, the 1981 Convention stipulates that any person has the right to know about the existence of a data file about him/her, as well as data about the controller of the file; to receive, after a reasonable period of time and without unreasonable delay or excessive expenditure, confirmation of whether the data relating to him is stored in the corresponding file, and a copy of the file; seek to correct or destroy data if they have been processed in violation of the domestic legislation adopted on the basis of the 1981 Convention; etc.

For the regional level, there is a trend towards harmonization with regard to automatic processing of personal data. This trend is manifested not just in EU acts but also in the OECD Guidelines of 1980. The second part of this document contains basic principles for application on the national level. They are named the Collection Limitation Principle, the Data Quality Principle, the Purpose Specification Principle, the Use Limitation Principle, etc. For example, the Collection Limitation Principle means that there should be limits to the collection of personal data and any such data should be obtained by lawful and fair means and, where appropriate, with the knowledge or consent of the data subject.

It is characteristic that the OECD document is different from the Convention for the Protection of Individuals with regard to Automatic Processing of Personal Data of 1981. For example, the 1981 Convention does not include the Openness Principle, which means that there must be a policy of openness to achievements, practices, and measures regarding personal data. However, the other principles are essentially the same.

The existing international documents concerning the protection of personal data as a component of privacy protection ultimately aim at harmonization of the national legislation of the individual states. They have limited coverage of international cooperation issues with consideration of the traditional forms of cooperation between states.

In particular, the OECD Guidelines stipulate that OECD Member countries should establish procedures to facilitate information exchange related to these Guidelines, and mutual assistance in the procedural and investigative matters involved. This document does not contain any more specific provisions.

More specific procedures for mutual assistance are contained in the 1981 Convention. This Convention stipulates that each Party shall designate one or more authorities for assistance in order to implement this Convention, the name and address of which it shall communicate to the Secretary General of the Council of Europe; the designated authorities shall receive requests for assistance from the authorities of other states and act on such requests.

On November 8, 2001, an Additional Protocol to the 1981 Convention was signed, which contains important provisions on supervisory authorities to be established by each state that is a party to the Convention. Each party provides one (or more) supervisory authority that is responsible for enforcing the restrictions of national law, ensuring the implementation of the principles set out in Chapters II and III of the 1981 Convention and the Protocol. To this purpose, these bodies, in particular, authorize to conduct investigations and intervene in legal processes, as well as take part in them or focus the attention of the competent judicial authorities on the violation of national law. Each supervisory authority considers claims signed by any person regarding the protection of his rights and fundamental freedoms with regard to the processing of personal data.



The system of supervisory authorities, which is being established since 2001, assists both interstate cooperation and protection of the rights of the data subject. The possibility for private individuals to apply to the supervisory authorities with regard to the protection of their personal data enables transborder cooperation related to the protection of personal data. In essence, the system of supervisory authorities is the prototype of an international privacy protection network. Another significant fact is that the competence of the authorities includes powers of investigation and intervention in jurisdiction proceedings.

The 1981 Convention also contains a special procedure of assistance to data subject's resident abroad. In the framework of this procedure, where a data subject resides on the territory of another party, he or she shall be given the option of submitting the request through the intermediary of the supervisory authority designated by that party.

Therefore, issues of mutual assistance regulated by the 1981 Convention take consideration of the interests of individuals whose data can be resided in other states. This contributes to development of the institution of legal assistance, allowing it to be provided by the authorized bodies on the request of individuals in the framework of an administrative procedure. This experience should be adopted on the universal level.

However, the development of the legal foundations of the global information society is largely spontaneous. The institutional mechanism of cooperation between the states is lacking a systemic vision of what legal regulation should be appropriate for the development of scientific and technical progress.

On the universal level, it is necessary to establish the legal foundations of the global information society.

It should be noted that at present, proposals on the conclusion of universal international treaties are primarily made by nonstate actors. The International Conference of Data Protection and Privacy Commissioners adopted a resolution entitled "The Standards of Privacy and Personal Data", under which it established a working group on the development of a draft universal treaty and specified the criteria for the development of such a draft. It is planned to submit the developed articles of the treaty to the UN. Therefore, researchers and international forums are proposing detailed projects, while no systemic work is done in the framework of the UN, WIPO, ITU, and UNESCO.

## **5. Conclusion**

Information and communication systems as complex objects of intellectual property need legal protection on the universal level. They have different functional assignment. Artificial intelligence is an information and communication system capable of synthesizing creative activity in the literary, artistic, and industrial fields. Big data is an information and communication system capable of collecting and processing information and providing access to it, in particular, with engagement of artificial intelligence. However, these objects are united in one category due to their complex structure. It is proposed to solve this problem by the development and adoption of an additional act to the Berne Convention for the Protection of Literary and Artistic Works of 1886, which establishes the legal regime for complex objects of copyright.

It appears quite reasonable to abolish the unification of the concept of privacy and personal data as a component of privacy in international law. Privacy is an area where individual needs of a person to be left to himself/herself are revealed. Every individual will delineate the limits of his/her privacy himself/herself. Contemporary international law is limited to regulation of matters of collection,

processing, storage, and transfer of personal data, which are not the only issues of privacy. It appears that the privacy provision in the International Covenant on Civil and Political Rights is quite generalized but does not require specification in the information age, as it enables any individual to protect privacy in every case when the individual so wishes. In order to make international law a flexible privacy protection instrument that is adapted to every person's needs, it is necessary to introduce new privacy protection mechanisms through a combination of treaty and institutional mechanisms.

At present, acts adopted in the framework of universal international organizations primarily relate to public law aspects of international information security and do not cover personal privacy. On the universal level, it is necessary to unify the conflict of law provisions on privacy protection. In order to guarantee privacy on the universal level, networks can be established similarly to regional networks for the protection of consumer rights. The establishment of such networks may be based on an international treaty or a resolution of an international organization. The network can exchange information, provide assistance in dispute settlement, and facilitate the cooperation of judicial and administrative authorities.

The information society concept should be accompanied by an integral concept of international legal regulation of information exchange relations in the information society. A key priority for the universal level is solving the problems that have already been solved in the framework of the Council of Europe (combating computer crime, personal data protection, regulation of services of the information society, and providing access to official information). At the same time, problems should be solved related to access to other types of information (in the fields of economics, law, education, and science), facilitation of the use of telecommunications, primarily electronic, in all the fields of international cooperation, development of unified standards of the Internet functioning including technical standards and network use rules, combating cyber-terrorism and defamation, and protection of intellectual property in the information society.


As a possible option for solving a set of complex problems arising in the global information society, it is proposed to establish an international mechanism to coordinate the cooperation of states in the development of a legal foundation of the global information society. For this purpose, an international organization can be established on the basis of the World Summit on the Information Society. Converting it to an international organization would not be difficult, as it has never stopped its activity. Further, the World Summit may make agreements with the UN, UNESCO, ITU, and other international organizations in order to coordinate the cooperation of international organizations in the information society development.

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