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SCOPE AND QUALITY OF LEGAL PROTECTION AFFORDED TO COMPUTER PROGRAMS AS OBJECT OF INTELLECTUAL PROPERTY

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Abstract
Computer programs are basic components of the usage of digital technology in all aspects of modern life, so the question arises as to how can current legal rules follow the development of digital technology i.e. computer programs as well as modalities of its usage. The use of digital technology, especially via creation of computer programs, affects the law, and, consequently, leads to the need for adjusting already established legal mechanisms or for creating new ones for this aspect of legal relations. Since creation and usage of computer programs is basically result of human creative activity (intellectual property), the need arises to position and classify, as well as to define rights, obligations and legal protection of subjects and objects involved in these legal relations. Computer program, in the context of the law of Republic of Serbia, is treated as an object of copyright, while comparative law analyses shows different legal treatments in national laws in the region. Having in mind that computer technology develops far more faster than legal regulation can follow, question arises as to what is current scope and quality of legal protection of computer programs, as object of intellectual property. Defined issues will be analyzed within legal systems of the states in the region – Republic of Serbia, Republic of Croatia, Republic of Montenegro and Bosnia and Herzegovina, as well as in the wider context of the law of the European Union and the process of harmonization of national laws with community law.

Keywords: *computer programs, intellectual property, copyright law, legal protection*

1. Introductory remarks – information society and intellectual property

It has become common to define modern society as "information society", even "digital society". Beginning of XXI century was marked by rapid growth in the usage of digital techonolgy which led to new understanding of information, thereby defining society as

determined by economic and social dimensions of information. Information is defined as non-material good, and is basically product of human mind and creation[1], therefore object of intellectual property. Author's work is, indeed, a kind of information, and that makes it a public good. Once created, it has positive external effects, being suitable for communication, enjoyment and lesson to everyone.

Economic and political significance of intellectual property is highly regarded in information or digital society, as society that developed with the beginning of XXI century. Information technology processes data in order to supply society with intellectual information which, finally, turns into knowledge as an economic value by itself and crucial factor of economy[2].

With every new technical item for mass communication, new possibilities appear for economic use of copyrightable creations, therefore copyright law must adapt itself to new challenges, mainly in the aspects of pecuniary rights of the author, in order to stay effective.

With the expansion of computer programs, as commercial goods of immense significance, on which depend almost all aspects of social as well as economic life, law of intellectual property faces new challenges. In the 70es and 80es of the last century computer programs were introduced as objects of intellectual property, firstly in USA. Later, this approach was adopted in almost all national laws. The development of computer programs requires the investment of considerable human, technical and financial resources while computer programs can be copied at a fraction of the cost needed to develop them independently. This is where the growing need for adequate copyright protection takes place.

Differences in national laws regarding legal protection of computer programs often have direct and negative effects on the functioning of inter-state economy and market. It is usual that computer programs enjoy copyright protection as literary works. But, it must be distinguished that only the expression of a computer program is protected, while ideas and principles which underlie any element of a program, including those which underlie its interfaces, are not protected by copyright. This will be discussed later in the paper.

This paper will offer an overview of copyright law, primarily in Serbian law, and how it embraces computer programs as author's work i.e. objects of intellectual property.

2. Computer programs and copyright– general remarks

Computer programs are results of the use of digital technology. They can be defined is a set of instructions for the computer, without the purpose to transfer the information contained in it to another person, so cannot be qualified as a form of interpersonal communication. The essence of its value is in its functionality i.e. making machine or computer drivers work.

To begin with small but important semantic remarks – difference between computer program and software. Computer program is rarely object of legal definition due to fast development of digital technology which would make any attempt of defining outdated and futile. Technically, computer program can be defined as sequence of orders or instructions whose purpose is to order a computer to exercise certain tasks or functions, whatever the mode,

[1] David P.A, Foray, D., *Economic Fundamentals of the Knowledge Society*, Policy Features in Education – An e-Journal, special issue Education and the Knowledge Economy, Vol. 1, No. 1, 2003, 25.
[2] Marković, S, *Pravo intelektualne svojine i informaciono društvo*, JP Službeni glasnik, Beograd, 2018, 19-22.

language or notation it takes. Software is broader term, in technical sense, which is made of two or more computer programs, preparatory design material (description of program) and additional, user's information. In European legislation software and computer programs are used in the same meaning, interchangeably. European Union Directive on the legal protection of computer programs[3] defines computer programs as programs in any form, including those which are incorporated into hardware, but also including preparatory design work leading to the development of a computer program provided that the nature of the preparatory work is such that a computer program can result from it at a later stage.

The function of a computer program is to communicate and work together with other components of a computer system and with users. Often, it is necessary to make physical interconnection and interaction in order to permit all elements of software and hardware to work with other software and hardware and with users. The parts of the program which provide for such interconnection and interaction between elements of software and hardware are generally known as 'interfaces', while this kind of functional interconnection and interaction is generally known as 'interoperability' .

Legal framework that regulates copyright and related rights in Republic of Serbia consists of The law on Copyright and Related rights[4], Regulations on the conditions to be fulfilled the copies of copyright protected works and subject matter of related rights which are deposited, entry in the register and deposition of copyright protected works and subject matter of related rights and the contents of the registration of deposited copyright protected works and subject matter of related rights with the competent authority[5], The Law on Special Powers for the Purpose of Efficient Protection of Intellectual Property Rights[6], and other relevant laws[7] as well as international regulation which includes WIPO Treaties and EU Directives.

Object of copyright law is author's work as individual creative expression of the author, therefore the barrer of rights defined and guaranted by copyright law is the author, as a person who created something using his independent intellectual activity.

Computer programs in any form of their expression, including their preparatory design material and other are enjoying protection same as written works. This solution resembles The Berne Convention for the Protection of Literary and Artistic Works[8], as well as EU Directive on the legal protection of computer programs[9].

A work of authorship, in the context of The law on Copyright and Related rights of the Republic of Serbia is an author's original intellectual creation, expressed in a certain form, regardless of its artistic, scientific or some other value, its purpose, size, contents and way of manifestation, as well as the permissibility of public communication of its contents. As works of authorship are deemed in particular written works (e.g. books, brochures, articles, translations, computer programs in any form of their expression, including their preparatory design material and other), spoken works (lectures, speeches, orations, etc.); dramatic,

[3] Directive 2009/24/EC of the European Parliament and of the Council of 23 April 2009 on the legal protection of computer programs, L 111/16, EN.
[4] Official gazette of RS 104/09 and 99/11 and 119/12, decision of Constitutional Court - 29/16
[5] Official Gazette RS", No. 45/2010; since July 3, 2010; in force since July 11, 2010
[6] Official Gazette of the RS", no. 46/06, 104/09
[7] http://www.zis.gov.rs/legal-regulations/laws-and-regulations.110.html
[8] 1971, https://www.wipo.int/treaties/en/ip/berne/
[9] Directive 2009/24/EC of the European Parliament and of the Council of 23 April 2009 on the legal protection of computer programs, L 111/16, EN.

dramatic-musical, choreographic and pantomime works, as well as works originating from folklore; works of music, with or without words; films (cinema and television); fine art works (paintings, drawings, sketches, graphics, sculptures, etc.); works of architecture, applied art and industrial design; cartographic works (geographic and topographic maps); drawings, sketches, dummies and photographs; the direction of a theatre play.

Applying copyright rules that refer to the literary works to the protection of computer program, we see that the protection includes not only the sequence of characters to which the program is encoded but also their significance. This way, copyright protection includes the method of concretizing the algorithm, but not the algorithm himself[10].

3. Object and conditions of copyright protection

For the establishment of subjective copyright there is no formal procedure (as there exist for patents) i.e. there is no author's work that could not fulfill conditions for being an object of copyright, since it is regarded as intellectual work that is creative expression of the author. The criterion for protection was always the originality of the work i.e. the individual stamp that the author gave his work. On the other hand, the programming technique of the day involves the use of program tools that are pre-prepared, reducing the space for the originality of the computer program and jeopardizing the originality of the expression of the author of the program itself.

A computer program shall be protected if it is original in the sense that it is the author's own intellectual creation. No other criteria shall be applied to determine its eligibility for protection.

In Republic of Serbia, keeping records and deposition of author's work is based on voluntary system. Competent authority is The Intellectual Property Office, and the purpose of protection is securing evidence for authors and other copyright holders. The holders of copyright and related rights may deposit copies of their works and subject-matters of related rights with the competent authority who shall keep a record of each kind of works of authorship and subject-matters of related rights. The data entered in the records shall be deemed true until proven to the contrary.

4. Scope of copyright protection

Author or coauthors shall enjoy moral and pecuniary rights with regard to his/her work of authorship - computer program/ software, from the moment of its creation. The author of the work shall be the holder of copyright. Besides the author, the holder of copyright may also be a person who is not an author who has acquired the copyright in accordance with the law on Copyright and Related rights.

Pecuniary rights shall last for the life of an author and 70 years after his/her death. Moral rights of an author shall last even after the expiration of his/her pecuniary rights. Co-authors' pecuniary rights shall expire after 70 years elapse from the death of the author that was the last to die.

Author's pecuniary rights include exclusive right to authorize or prohibit fixation or reproduction of his work in total or partially, by any means, in any shape, in any manner,

[10] Marković, S, *op. cit.* note 3, 150.

permanently or temporarily, directly or indirectly. In the context of computer programs, reproduction includes storage of the work in electronic form into the memory of the computer, as well as operation of the program in the computer. Pecuniary rights also include exclusive right of author to place originals or multiplied copies of his work on the market or to do so by sale or other means of property transfer.

Author of the computer program has exclusive right to give permission or prohibit renting the originals or the multiplied copies of his/her work, as well as to borrow a copy of computer program. So called "internet clause" gives the author of computer program exclusive right to communicate his/ her work to the public by wire or wireless means including the making available in such a way that member of the public may individually access the work from a place and at a time he/she chooses. Pecuniary rights also include right to adapt, arrange or alter the work in some other manner.

If the author's work is computer program there are special conditions as to suspension of exclusive rights, better known as three step test. The person who has legitimately obtained a copy of computer program for his/her own usual use, may store the program in the computer memory and run the program, eliminate errors in the program and make any other necessary changes in it, in accordance with its purpose, unless otherwise provided by contract, make a one back-up copy of the program on a lasting tangible carrier, decompile the program exclusively for the purpose of obtaining the data necessary for making that program inter-operational with some other independently developed program or some hardware. This modalities of usual use can be done without the author's permission and without paying any remuneration.

Also, any person shall have the right of temporary reproduction of the work of authorship without the author's permission and without paying any remuneration, under the conditions that the reproduction is transient or incidental, that reproduction is an integral and essential part of a technological process, that purpose of reproduction is to enable a transmission of data in a network between two or more persons through an intermediary, or to enable a lawful use of a work of authorship, and that reproduction does not have independent economic significance. Explicitly it is not allowed to reproduce computer programs for personal non-commercial needs, in order to enable legal usage of computer program.

If a computer program was produced on the basis of a contract on commissioning a work of authorship, the commissioning party shall acquire all rights to the exploitation of that computer program, unless otherwise provided by the contract.

If an author has created a work as an employee in the performance of his/her duties, the employer shall be authorized to disclose such work and to hold exclusive pecuniary rights on its exploitation within the scope of the employer's registered business for the period of five years from completion of that work, unless otherwise provided by a general regulation or employment contract. The author shall have the right to special remuneration, depending on the proceeds of the work's exploitation. If the work of authorship is a computer program, the permanent holder of all exclusive pecuniary rights on such work shall be the employer, unless otherwise provided for in the contract.

The infringement of the copyright or related rights is the unauthorized performance of any act encompassed by the exclusive rights of the holder of copyright or related rights, not paying remuneration prescribed by The law on Copyright and Related rights or contract, as well as inobservance of other obligations due to the holder of copyright or related rights, as prescribed by The law on Copyright and Related rights.

Any holder of copyright or related rights may file a suit and request determination of the infringement of a right, termination of the infringement of a right, destruction or alteration of the objects instrumental to the infringement on rights, including copies of the subject-matter of protection, their packaging, stencils, negatives and the like, as well as destruction or alteration of the tools and equipment that has been used for production of the objects instrumental to the infringement of rights, if so is necessary for the protection of rights, compensation for material damages, and finally publication of the court decision at the defendant's expense. If the infringement of a pecuniary right was done intentionally or by gross negligence, the plaintiff may, instead of indemnity for material damage, claim up to threefold amount of usual remuneration that would have been paid had the concrete protected subject-matter been used lawfully. Proceedings for the infringement on copyright and related rights shall be urgent. Protection is also afforded via criminal law proceedings and economic offences.

But, how does it work in practice?

The software industry offers its computer programs on the market via CD, packed with the appropriate instruction in an adequately marked box with the necessary data and trademark of the manufacturer. A transaction that takes place in the store looks like a classic purchase, but it is actually copyright agreement (license agreement), and the price paid is regarded as copyright or license fee. The box contains the text of the access agreement, which clearly defines for which purposes the program can be used, on how many computers it can be installed, how many computers connected to it can access, what is the amount of the contractual penalty in case of contract breach, etc. In this way, software makers do not rely on copyright protection, but resort to contractual protection. As expressing the consent of the willingness to enter into such a contract, a judicial comparative practice has brought about the concurrent action of splitting the protective film into which the CD is wrapped (shrink-wrap license), or the mouse click on the field *I accept* on the screen (mouse/click/enter license)[11].

In the case-law it is defined that the process of running a program in the computer itself is its multiplication. This attitude is further accepted in the EU law. Thus, the legal use of a computer program implies the obligation to obtain a license from the copyright holder for such form of use. Therefore, when a person without the consent of a copyright holder records a computer program from the Internet and uses it, it is a copyright infringement, but this is not the case when it records music or a movie.

Serbian law uses the term user of computer program, rather than the owner. This leads to conclusion that software can never be bought but only given for use under certain conditions defined by the author or holder of the copyright, i.e. by some kind of license system as the only way to use a software. EU Directive on the legal protection of computer programs uses the terms: "rental"[12] of computer program, a lawful acquirer of computer program or a copy of computer program, a person having a right to use computer program, and etc, which leads to the conclusion that some kind of license system is the only way to use a software.

[11] *Ibidem*, 148.

[12] The term 'rental' means the making available for use, for a limited period of time and for profit-making purposes, of a computer program or a copy thereof.

5. Brief overview of EU and regional legislation

According to the EU Directive on the legal protection of computer programs, the exclusive rights of the author to prevent the unauthorized reproduction of his work should be subject to a limited exception in the case of a computer program to allow the reproduction technically necessary for the use of that program by the lawful acquirer. This means that the acts of loading and running necessary for the use of a copy of a program which has been lawfully acquired, and the act of correction of its errors, may not be prohibited by contract. In the absence of specific contractual provisions, including when a copy of the program has been sold, any other act necessary for the use of the copy of a program may be performed in accordance with its intended purpose by a lawful acquirer of that copy. A person having a right to use a computer program should not be prevented from performing acts necessary to observe, study or test the functioning of the program, provided that those acts do not infringe the copyright in the program. The unauthorized reproduction, translation, adaptation or transformation of the form of the code in which a copy of a computer program has been made available constitutes an infringement of the exclusive rights of the author. Nevertheless, circumstances may exist when such a reproduction of the code and translation of its form are indispensable to obtain the necessary information to achieve the interoperability of an independently created program with other programs. Only in these limited circumstances, performance of the acts of reproduction and translation by or on behalf of a person having a right to use a copy of the program is legitimate and compatible with fair practice and must therefore be deemed not to require the authorization of the right holder. An objective of this exception is to make it possible to connect all components of a computer system, including those of different manufacturers, so that they can work together. Such an exception to the author's exclusive rights may not be used in a way which prejudices the legitimate interests of the right holder or which conflicts with a normal exploitation of the program.

Directive offers special measures of protection for computer programs, which Member states are expected to enroll in national legislation. Member states should provide in national legislation appropriate remedies against a person committing any act of putting into circulation a copy of a computer program knowing, or having reason to believe, that it is an infringing copy; act of possession, for commercial purposes, of a copy of a computer program knowing, or having reason to believe, that it is an infringing copy, or any act of putting into circulation, or the possession for commercial purposes of, any means the sole intended purpose of which is to facilitate the unauthorized removal or circumvention of any technical device which may have been applied to protect a computer program. Any infringing copy of a computer program shall be liable to seizure.

The Republic of Croatia has regulated legal and legislative intellectual property protection since the second half of the 19th century. Today, as EU Member state, it has achieved high quality of the relevant legislation and its compliance with the highest international standards. Moreover, the harmonization of the legal framework in the field of intellectual property law with the *acquis communautaire* was completed and standards of the most developed EU Member States in applying intellectual property as development resources are established. The competent authority for all the tasks concerning monitoring, analyzing and providing recommendations for the implementation of new regulations and legal institutes in the Republic of Croatia is the State Intellectual Property Office. Copyright and related rights in the Republic of Croatia are regulated by Copyright and Related Rights Act and Act on

Amendments to the Copyright and Related Rights Act[13]. In the Republic of Croatia computer programs are protected as copyright works of language. The protection provided for in this Act for databases, shall not apply to computer programs used in the making of databases accessible by electronic means or in the operation thereof. The right of revocation does not apply to electronic databases and computer programs. Also, special obligations of the right holder regarding removing special protective measures in order to enable the users or their associations access to such works and the use thereof, do not apply to computer programs. Protection of technological measures does not apply to computer programs.

Special provision for computer programs are grouped in Chapter 8 of the Act, which include definition of computer program and special case of computer program created in the course of the employment, exclusive rights of the author of computer program (permanent or temporary reproduction of a computer program by any means and in any form, translation, adaptation, arrangement and any other alteration of a computer program, and the reproduction of the results thereof, any form of distribution of the original or copies of a computer program, including the rental thereof) and exceptions (including error correction, the making of a back-up copy, observe, study or test the functioning of a program in order to determine the ideas and principles that underlie any element of the program, if he does so while performing any of the acts of loading, displaying, running, transmitting or storing the program which he is entitled to do), decompilation in order to obtain the information necessary to achieve the interoperability of an independently created program with other programs, and special measures of protection regarding infringements of the rights in a computer program. Computer programs shall not be subject to public lending.

In the Republic of Montenegro, copyright and related rights are protected by The law on Copyright and Related rights[14]. Computer programs are afforded copyright protection as written works, and special Section B is dedicated to protection of computer programs, which includes definition of computer program, right of reproduction and limitations, decompilation and creation of computer program in course of employment.

In Bosnia and Herzegovina, copyright and related rights are protected by The law on Copyright and Related rights[15]. Computer programs are afforded copyright protection as written works, and special Section 4 is dedicated to protection of computer programs, which includes definition of computer program, right of reproduction and limitations, decompilation and creation of computer program in course of employment.

6. Limitations to copyright protection

Computer program is complex copyrightable work, and contains a set of copyrightable elements. Copyright law provides protection against the litteral copying of a work or parts of it, but does not provide protection against borrowing ideas, methodologies, technical solutions and processes contained in the work. Methodologies, themes, ideas, concepts, colors and etc. are not protected copyright objects. According to Serbian Law on Copyright and Related rights the protection of copyright shall not apply to general ideas, procedures and methods of operations or mathematical concepts as such, as well as concepts, principles and instructions

[13] OG No. 167/2003, 79/2007, 80/2011, 141/2013, 127/2014, 62/2017, 96/2018
[14] "OG CG", no. 37/2011 and 53/2016.
[15] OG BIH XIV /63/, 3. avgusta 2010.

included in a work of authorship. Explicitly, the following shall not be deemed works of authorship: laws, decrees and other regulations; official materials of state bodies and bodies performing public functions, official translations of regulations and official materials of state bodies and bodies performing public functions; submissions and other documents presented in the administrative or court proceedings.

Copyright law protects the specific form of expression of certain elements that make for computer program, not the elements itselves, which enojy protection as industrial property, mainly patent protection.

In national laws, as well as on European level, there is a statutory ban on protecting computer programs as patentable inventions or utility models. As patentable inventions within the meaning of Art. 7/4 of the Law on Patents of the Republic of Serbia are explicitly excluded "discoveries, scientific theories and mathematical methods; aesthetic creations; plans, rules and procedures for performing intellectual activities, playing games or performing tasks; computer programs and displaying information. The European Patent Convention (Article 52 § 2) also expressly excludes from the scope of the definition of patentable inventions: computer programs, artistic creation, plans, rules and methods of mental activity, playing games or business activities, the presentation of information, discoveries and mathematical methods[16]. Never the less, computer programs can enjoy patent protection as part of other inventions, because the prohibition only applies to cases where legal protection is sought for computer programs as such but software i.e. computer program can be patented as part of invention/hardware if it meets prescribed legal conditions.

Representatives of the software industry in the United States consider that copyright law does not provide sufficient protection to computer programs, but it is necessary that computer programs be subject to patent protection. The justification is that the creative essence of the computer program is its algorithm which is further elaborated in the form of instructions for the work of the computer. The algorithm is considered an idea, and it does not belong to the subject of copyright protection, and it is possible to use the algorithm inappropriately. By patent protection, the algorithm itself would be protected.

In practice, it is unclear what constitutes the idea or procedure or method of work in the computer program, and when it comes to the processing of the program, copyright law protection is not efficient. The more effective it is to indicate the protection from the production and distribution of unauthorized copies of the program.

The facility of unauthorized high-quality copying of computer programs leads to the situation that many computer users are purchasing and using cheaper, unauthorized copies of the program. Software industry reported on the need to sanction the use of unauthorized programs, but is difficult to implement.

Copyright law is merely formally embracing the specificity of digital technology, but the sanctioning of copyright infringement has become extremly difficult to prove and process, bearing in mind both factual and legal railiques among national legal systems. Measures that take place now involve various techical measures (such as passwords, blocking of access, integrated electronic information, etc).

[16] It should be underscored, however, that despite the cited provision, the European Patent Office (EPO) has registered a number of software patents, including videogames, for example, issued to Konami Co., Ltd. European Patent Video Game Patent (EP 1703429 A2)

7. Concluding remarks

To conclude, there are manu significant points on which copyright law and computer programs as intellectual property object contrast. There is a question of originality of computer program that is jeopardized by usage of pre-prepared tools for programing, following impossibility od copyright law to include in its protection the algorithm as the essence of the program. Another point is exclusion of computer programs from patent law protection. And, finally, software industry itself chooses contractual protection rather than copyright protection. The question remains, are there some core copyright law principles that could be futher adapted to computer programs, perhaps new dimensions that could be given to liscence system? Or, are computer programs likely to escape copyright law, or the law altogether?

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