COMPARATIVE ANALYSIS OF EU AND US LEGAL FRAMEWORKS IN PROTECTING SOFTWARE: FINDING A BETTER APPROACH FOR THE KYRGYZ REPUBLIC

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LL.M. SHORT THESIS

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Abstract

Even though software industry is actively developing in the recent years and receives governmental support in the Kyrgyz Republic, there is no substantial practice developed when it comes to the legal protection of intellectual property rights in software. Thus, one of the main goals of the paper is to determine which approach is more suitable for the Kyrgyz Republic. This thesis explores the existing legal mechanisms of software protection in developed legal systems, namely the European Union (EU) and the United States (USA). It also analyzes current situation with software protection in the Kyrgyz Republic, including the existing legal framework, established practice, and demand of the relevant stakeholders. In the Introduction, this work analyzes the nature of the existing problem, focusing both on the importance of the software industry to the Kyrgyz Republic and the specific qualities of software as an intellectual property. Chapter I of this work gives an overview of the existing legal framework in the EU and focuses on software protection by copyright and also gives attention to patentability of computer-implemented inventions. Chapter II gives an overview of the US approach towards software protection and focuses on software patents. Chapter III explores the relevant legal framework in the Kyrgyz Republic, presents the opinion of the high-qualified local practitioners, and suggests that the better approach for the Kyrgyz Republic is the one followed by the EU because of the already existing comparable legislation and a number of subsequent practical considerations.

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Introduction

Economic development in the world now largely relies on innovations and information technologies. That is why it is not a surprise that such companies as Google, Microsoft, Amazon, as well as rather unknown Micron Technologies and Western Digital, are constantly making it into the list of the world's largest corporations by the total revenue and being included in the annual Fortune 500 list.[1] However, there are evident tendencies seen not only between tech and non-tech companies, but also between the different innovative industries. According to the World Economic Forum, in the USA, the world's leading venture capital market, software accounts for 36.2% of investment, while, for example, information technology services accounts for 6.0% and telecommunication accounts just for 2%.[2] It shows that software industry is actively developing and attracting more and more capital. This trend is true not only for the developed economies such as the USA, but also for developing countries such as the Kyrgyz Republic.

As the most landlocked country in the world with the absence of any substantial natural resources and collapsed traditional industries after the break-up of the Soviet Union, the Kyrgyz Republic was simply forced to pay the maximum attention to its human resources in search for opportunities for the economic development. However, policymakers and educational institutions were quite late in their reactions to the new reality. In 2002, 11 years after the country got its independence, the government finally introduced the National Strategy "On Information and Communication Technologies Development for the Kyrgyz Republic", where it stressed out the main priorities, goals and objectives, basic principles, regulations, and directions of state policy in the field of information and communication technologies.[3] Notwithstanding the big expectations,

[1] Erin Griffith, "The top technology companies of the Fortune 500", Fortune Magazine official website, http://fortune.com/2015/06/13/fortune-500-tech/, accessed February 4, 2017

[2] Rachel Hallett, "These are the industries attracting the most venture capital", World Economic Forum official website, https://www.weforum.org/agenda/2017/02/these-are-the-industries-attracting-the-most-venture-capital/, accessed March 1, 2017

[3] National Strategy "On Information and Communication Technologies Development for the Kyrgyz Republic" of March 10, 2002, accessed through the Ministry of Justice of the Kyrgyz Republic official website at http://cbd.minjust.gov.kg/act/view/ru-ru/3679?cl=ru-ru, accessed February 4, 2017

that was just a formal gesture. In reality, the industry was still left on its own. Only in the last 8-9 years some significant changes took their place so it became possible to talk about the emergence and development of the software industry in the Kyrgyz Republic. First, in 2007 group of Kyrgyzstani IT-companies had gathered and established Kyrgyz Software and Service Developers Association (hereinafter referred to as the "KSSDA"), which main goal was to let the software developers get out of the shade economy, where most of them operated by that time.[4] Second, in 2008 the KSSDA had initiated the introduction of a special tax regime for the producers of tech products, so called High Technologies Park.[5] The consequent Law of the Kyrgyz Republic "On High Technologies Park" and respective amendments to the Tax Code of the Kyrgyz Republic were introduced by the parliament in 2011, while the actual operations of the Park started in 2013.[6] Only since that time it became possible to gather official statistics and soundly talk about the development of software industry in the Kyrgyz Republic. For instance, in 2016 residents of High Technologies Park have generated revenues in the amount of 240 million KGS (~ 3.5 million USD).[7] These numbers might seem absolutely insignificant in comparison with the world's best and even average indicators, but they do become significant and illustrative for the Kyrgyz Republic if to supplement them with the facts that these numbers show triple revenue growth since 2014 and double growth since 2015.[8] Also the average annual income of the software engineer operating in the Park is about 14,000 USD, while the national average annual income is close to the 2000 USD.[9] In addition to the tax preferences, experts say that there are other factors, like

[4] Aziza Berdibaeva, "High-Tech Park of the Kyrgyz Republic: In the absence of oil and gas, the bet is made on IT creativity", Digital Report project official website, https://digital.report/park-vyisokih-tehnologiy-kyirgyizstana-v-otsutstvie-nefti-i-gaza-stavka-sdelana-na-it-kreativ/, accessed March 5, 2017
[5] Ibid.
[6] Rahat Sabyrbekov, "Software in Kyrgyzstan: Potential Source of Economic Growth", International Conference on Eurasian Economies, 2011, p. 403, accessed at http://www.avekon.org/papers/256.pdf, accessed March 10, 2017
[7] "Revenues of High-Tech Park residents has increased by 2 times - up to 241.4 million KGS", Akchabar Financial Portal, https://www.akchabar.kg/news/vyruchka-rezidentov-parka-vysokih-tehnologij-vyrosla-v-2-raza-do-2414-mln-somov/, accessed March 1, 2017
[8] Azis Abakirov, "Kyrgyz High-Tech Park: IT innovation & creativity provides fuel for the Kyrgyz economy without oil & gas", Medium Blogging Platform, https://medium.com/@azisabakirov/kyrgyz-high-tech-park-2e99fded44ff, accessed April 1, 2017
[9] Azis Abakirov, "Kyrgyz High-Tech Park: IT innovation & creativity provides fuel for the Kyrgyz economy without oil & gas", Medium Blogging Platform, https://medium.com/@azisabakirov/kyrgyz-high-tech-park-2e99fded44ff, accessed April 1, 2017

reliable internet connection and decent internet penetration, as well as a relatively cheap labor force, which are contributing to the development of the industry.[10] Thus, software industry is actively developing in the Kyrgyz Republic and becoming more important and influential.

However, whenever any new industry emerges and starts to develop in the country, besides the questions of positive impact and potential growth, the issue of regulation of that industry always appears on the stage. For the purposes of clarity, under the corresponding or respective regulation the author of this work means the legal framework related to the protection of intellectual property rights in software. This is particularly important in the context of the knowledge economy. When it comes to the software industry in the Kyrgyz Republic, one can say that since the industry is very new for the country, the corresponding regulation has not yet been clearly established. Others may say that actually all the necessary legislation is already there, but it is the application of that legislation which leaves many questions. In reality, since the topic is relatively new for the state, there is still no mutual understanding between the regulator and practitioners in the field with regards to the means and available legal instruments. There is no developed judicial practice and the main governing body in the area, State Agency on Innovations and Intellectual Property under the Government of the Kyrgyz Republic (hereinafter referred to as the "Kyrgyzpatent"), so far failed to address this issue in any manner until the present moment.[11] From one point of view, it shows that the level of the industry development is still low. On the other hand, it means that while the industry is still in its infancy, the Kyrgyz Republic can still choose the approach and the legal framework for the legal protection of software without bringing major adverse effects on the current stakeholders, but affecting the future development of the industry.

[10] Rahat Sabyrbekov, "Software in Kyrgyzstan: Potential Source of Economic Growth", International Conference on Eurasian Economies, 2011, p. 402, accessed at http://www.avekon.org/papers/256.pdf, accessed March 10, 2017
[11] Official website of the State Agency on Innovations and Intellectual Property under the Government of the Kyrgyz Republic, http://patent.kg/index.php/ru/, accessed April 1, 2017

Different means for the legal protection of software are actually the topic of the long-heated debates in the world. This is because they determine how the property rights for software appear and how they are protected and enforced. In general, property rights, including intellectual property rights, are lying at the roots of the market economy. Without them it is not possible to basically conclude any transactions, buy or sell goods, including software products. It is important to understand who owns a good, how one establishes a right for the good, who has a right to transfer the good, what is the fate of the transferred good and so on. While it is pretty easy to understand the concept of property rights in the context of material objects, intellectual property rights are a bit more complex concept to perceive. This is because the value of intellectual property is in the idea itself, rather than in the material object. That is why conventional property rights cannot provide the necessary and adequate protection for them. When it comes to software, it becomes even more complex because software contains several characteristics of different intellectual property objects. From one side, it can be described as a literary work, written in its own specific programming language, thus, copyright protection is available for it. From the other side, one can pay specific attention to the technical function and problem-solving aspect of the software, which makes it closer to the concept of invention, thus, introducing patent protection for it. That is basically where the main debate over the legal protection of software comes from.

While it may look like a too generalized view, the present work looks at the battle between copyright and patent protection for software like at the battle between two different well developed legal systems: the EU and the USA. Traditionally, the EU is considered to be a system which stands more for copyright protection for software, while the USA is considered to be a system which is friendlier to patent protection for software. The author of this work totally acknowledges the presence of patent protection for computer-implemented inventions in the EU, as well as the availability of copyright protection for software in the USA. However, for the purposes of clarity, the present work mostly uses the term "EU approach" with regards to the pro-copyright legal framework for software protection, and "US approach" with regards to the pro-patent framework

for software protection. In the abovementioned context, the main research question which underpins this thesis work is:

- Which regulatory approach and framework in the field of legal protection of software is more suitable for the Kyrgyz Republic: US or EU?

To answer the question the author looks at each of the approaches separately, pays attention to their specifics, tries to understand the underlying rationale, looks at their advantages and drawbacks, analyzes the present available legal framework in the Kyrgyz Republic, examines the needs of the local market and opinions of the relevant stakeholders, and, finally, makes his suggestion on the issue, which constitutes the following thesis statement for this academic work:

- Among two developed approaches to the issue of legal protection of intellectual property rights in software, US and EU, the more suitable one for the Kyrgyz Republic is the one followed by the EU, which generally provides for the copyright protection of software and provides patent protection for computer-implemented inventions, because of the already existing comparable legislation, size and needs of the market, and subsequent practical considerations.

Chapter I of this work discusses the copyright protection for software through the prism of corresponding EU legal framework. In doing so it also refers to the provisions of major international treaties in the area, such as the Agreement on Trade-Related Aspects of Intellectual Property Rights (hereinafter referred to as the "TRIPS Agreement"), Berne Convention for the Protection of Literary and Artistic Works (hereinafter referred to as the "Berne Convention") and World Intellectual Property Organization Copyright Treaty (hereinafter referred to as the "WIPO Copyright Treaty") since those international legal instruments notably affected EU regulation of the industry. The Chapter also observes the practice of European Patent Office (hereinafter referred to as the "EPO") and presents the concept of computer-implemented inventions. **Chapter II** of

this work discusses the patent protection for software through the prism of corresponding US legal framework, significantly relying on the relevant case law. It also illustrates the advantages and drawbacks of the patent protection in comparison with the copyright one. **Chapter III** of this work explores the relevant available legal framework in the Kyrgyz Republic, presents the opinion of the high-qualified local practitioners, and proposes that the better approach for the Kyrgyz Republic is the one followed by the EU because of the already existing comparable legislation and a number of subsequent practical considerations.

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Methodology

This work is largely based on the analysis of regulation related to the legal protection of intellectual property rights in software in two different legal systems: the EU and the USA. The author has chosen these two jurisdictions because of their level of development, subsequent availability of scholarly materials, and courts and patent offices practice. The author also believes that the differences between the systems contribute to the consideration of the topic from the perspective of the battle between copyright and patent protection for software. The thesis also assesses number of legal articles and scholarly publications on the topic. Finally, the part related to the Kyrgyz Republic is based on the analysis of available legal framework for software protection and three interviews, conducted by the author of this work, with the top local experts and practitioners in the field, namely:

- Aleksei Vandaev – a certified Trademark and Patent Attorney, Senior Lawyer and Head of the IP Law practice of Kalikova & Associates Law Firm, the largest and one of the leading law firms in the Kyrgyz Republic.[12]

[12] Profile of Aleksei Vandaev, Kalikova & Associates Law Firm official website, http://www.k-a.kg/eng/aleksei-vandaev-senior-lawyer, accessed March 12, 2017

- Saodat Shakirova – a certified Trademark and Patent Attorney, Partner of the Arte Law Firm, the leading law firm in the Kyrgyz Republic focusing specifically on intellectual property issues.[13]
- Azis Abakirov – CEO of the Unique Technologies software development company, co-founder and chairman of the Kyrgyz Software and Service Developers Association, initiator of the creation of High Technologies Park tax regime for software developers in the Kyrgyz Republic.[14]

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Scientific novelty

At the present moment, there are no any researches or articles of local or foreign scholars on the topic of legal protection of software in the Kyrgyz Republic. Since the industry is quite new for the Kyrgyz Republic, the issue was not previously discussed.

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Research delimitation

The author of this work acknowledges the presence of the other developed legal systems when it comes to the issue of legal protection of software, for example, Singapore and Japan. However, this thesis is only limited to the comparison between EU and US approaches to the issue. This paper has no intention to go into the roots of the battle between copyright and patent protection for software. Rather it just presents two different approaches as they exist, and attempts to find out which approach is more suitable for the Kyrgyz Republic. The author also recognizes the existence of widely discussed idea that software industry requires its own *sui generis* system of regulation. However, this work makes no attempt to present or discuss one.

[13] Arte Law Firm official website, http://www.arte.kg/en/about/, accessed March 12, 2017
[14] Malika Bayaz, "Aziz Abakirov, Kyrgyz High-Tech Park: To develop the ICT sector, it is necessary to work openly", Digital Report project official website, https://digital.report/azis-abakirov-pvt-kyrgyzstan/, accessed March 12, 2017

Chapter I – EU approach to the software protection (Pro-copyright)

As an unconventional product of human intellectual activity, software has created many debates over the issue of its nature. These debates became especially important in the context of the legal protection which can or should be provided to the software. Some people argue that software is mainly about the code (set of instructions) written in a specific programming language, and, thus, should be treated the same way as the work of literature and be protected by copyright. Others disagree and claim that, speaking about software, one should pay more attention to the function performed by the software and the idea behind it, and, thus, copyright protection is not enough. These opposing opinions resulted not only in different individual views but also contributed to the development of different approaches in some of the world's leading legal systems. One of such approaches is the one traditionally and currently followed by the EU, which generally stands for copyright protection for computer software and limited patentability for so-called computer-implemented inventions. The present Chapter discusses the underlying rationale behind the copyright protection for software, the development of international and consequent EU legal framework in this regard, discusses advantages and disadvantages of the approach, and, finally, gives attention to the idea of patentability of software in the EU context, by introducing the concept of computer-implemented inventions.

1.1 Why copyright protection for software

The term "software" is not usually clearly defined or defined at all in most of the international and domestic legal instruments. Sometimes it is the term "computer program" which one can find there. However, it is important to understand what software is. It helps to understand why it is copyright protection that historically became available for it and how it actually works. The most general definition of a software will include "the set of instructions or programs, instructing the computer to do specific tasks."[15] The focus here should be given to "the set of

[15] Definition – What does software mean? *Techopedia*, accessed on March 25, 2017, https://www.techopedia.com/definition/4356/software

instructions" part. The problem with the instructions is that people and computers do not understand each other directly. That is where concepts of the source code, object code, and programming languages come into play. Programmers or coders write the instructions in programming languages, which are readable and understandable by people, especially by the professionals in the field.[16] This is what the "source code is."[17] Like it is true for the human languages, there are different types and families of programming languages.[18] For example, the following is the part of the source code of the software created for the card deck shuffling, written in a C++ programming language:[19]

```
else if ((CurrCard + 1) % 13 == 12) {
CardDeck[CurrCard + (CurrSuit * 13) + (CurrDeck * 52)].faceVal = 'Q';
CardDeck[CurrCard + (CurrSuit * 13) + (CurrDeck * 52)].fullName = "Queen of"
```

However, it is still not a language which computer can understand. The source code should be 'translated' to a language, which computer understands. The process of translation is called "compilation" and the result of this process is an "object code", which represents the version of the instructions in a binary form, meaning a series of "ones" and "zeros, readable and understandable by the computer."[20] That is when a computer can perform the instructions and run the program.

By understanding the concepts of the source code, object code, and programming languages, one can already grasp the idea why it is copyright that became the most popular legal instrument for the software protection. Generally, copyright used as a term which describes rights

[16] What is code? *The Economist*, http://www.economist.com/blogs/economist-explains/2015/09/economist-explains, accessed on March 20, 2017 (hereinafter referred to as "What is code? *The Economist*")
[17] International IP Protection of Software, *WIPO publication*, accessed at www.wipo.int/edocs/mdocs/copyright/.../wipo.../wipo_ip_cm_07_www_82573.doc., accessed on December 5, 2016 (hereinafter referred to as "International IP Protection of Software, *WIPO publication*")
[18] What is code? *The Economist*
[19] A portable card deck class with shuffling source code, Cprogramming.com, http://www.cprogramming.com/snippets/source-code/a-portable-card-deck-class-with-shuffling, accessed on March 25, 2017

[20] International IP Protection of Software, *WIPO publication*

authors of literary and artistic works have over their creations.[21] In that sense, it is not that hard to draw parallels between, for example, the author of the book, the actual text of the book, and the language used (i.e., English, French, Russian), and the creator / author of the software, the actual code (source and object), and the programming language used (i.e., C++, Python, Java). It is very true that software is much more than just its textual representation in the form of either source or object code. However, the logic and rationale behind the copyright protection for computer software seems to be clear and legitimate. The following sections of the present Chapter look at the presence and evolution of the notion of copyright protection for software on the international and EU levels.

1.2 International legal framework

1.2.1 Berne Convention

When it comes to the issues of copyright, the main international legal instrument is, for sure, the *Berne Convention for the Protection of Literary and Artistic Works*. Being adopted in September 1886, initially it obviously neither contained nor intended to contain any provisions directly or indirectly applicable to the computer software.[22] However, considering that the last amendments were introduced in 1979 and entered into force in 1984, the Berne Convention could have included any mentions or references to software or computer programs, but it did not do so.[23] Despite this fact, it is one of the most important legal instruments because it establishes the main mandatory rules and principles governing copyright worldwide, including the copyright protection related to software. First, Article 3 (1) of the Berne Convention establishes that copyright protection is applicable to any nationals or residents of all states that are parties to the convention, which, considering the number of the parties, creates almost a worldwide recognition of rights of

[21] What is Copyright? WIPO official web-site, http://www.wipo.int/copyright/en/, accessed on March 10, 2017
[22] *Berne Convention for the Protection of Literary and Artistic Works*, September 9, 1886, TRT/BERNE/001, entered into force 5 September 1885, [The Berne Convention], accessed at http://www.wipo.int/wipolex/en/treaties/text.jsp?file_id=283698
[23] Summary of the Berne Convention, *WIPO official web-site*, http://www.wipo.int/wipolex/en/details.jsp?id=12214

the authors.[24] Second, the Berne Convention introduces the idea that the copyright protection is available from the moment of creation of the work and do not require any formal registration with the state authorities.[2526] Third, the convention provides for the minimum standards of protection and also provides the minimum term of fifty years after the death of the author for the protection of the work.[27] All of these, coupled with the fact that further international treaties make direct references to the Berne Convention[28], makes it one of the most important international instruments for the copyright protection of software.

1.2.2 TRIPS Agreement

However, the Berne Convention itself does not have any mentions of software or computer programs. The issue is solved by another international legal instrument, the *Agreement on Trade-Related Aspects of Intellectual Property Rights.* Being administered by the World Trade Organization and having all of its 164 members as parties, TRIPS Agreement is considered to be "to date the most comprehensive multilateral agreement on intellectual property."[29] It practically covers everything related to intellectual property, including copyright and related rights, trademarks, patents, industrial designs, and geographical indications. One of the main advantages of the TRIPS Agreements, compared to other international instruments, is the presence of an effective enforcement mechanism.[30] Unlike the Berne Convention, TRIPS Agreement explicitly mentions and regulates computer programs. In doing so, however, it refers to the Berne Convention, stating that "computer programs, whether in source or object code, shall be protected as literary works under the Berne Convention (1971)", thus, officially proclaiming copyright protection for the computer software.[31] Some authors argue that the specific mentioning of source

[24] Article 3 (1) of the Berne Convention
[25] Article 1 (1) of the Berne Convention
[26] Article 1 (2) of the Berne Convention
[27] Article 7 of the Berne Convention
[28] Article 10 of *The Agreement on Trade-Related Aspects of Intellectual Property Rights*, April 15 1994, entered into force 1 January 1995, [The TRIPS Agreement], accessed at https://www.wto.org/english/docs_e/legal_e/27-trips.pdf
[29] Overview of the TRIPS Agreement, *WTO official web-site*, https://www.wto.org/english/tratop_e/trips_e/intel2_e.htm#patents
[30] Ibid.
[31] Article 10 of the TRIPS Agreement

and object codes separately is not necessary because Article 2 (1) of the Berne Convention states that the literary of artistic work is protected "whatever may be the form or mode of its expression."[32] Moreover, it is further suggested that a certain point of time such wording, as provided in Article 10 (1) of the TRIPS Agreement, may become problematic, if in future software will be characterized by something else rather than source or object code.[33]

1.2.3 WIPO Copyright Treaty

The further developed international legal instrument somehow deals with this issue. According to the Article 4 of the *World Intellectual Property Organization Copyright Treaty*,

> 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.[34]

In comparison to the TRIPS Agreement, it extends the notion of copyright protection for software to any form of expression without sticking to the concepts of source or object code. However, despite this differences, in an agreed statement to the Article 4, it states that the scope of protection for computer programs under the WCT is consistent with both Article 2 of the Berne Convention and relevant provisions of the TRIPS Agreement.[35] Such an agreed statement was necessary in order to make it clear that, despite the differences in the wording, scopes of protection under the TRIPS Agreement and under the WCT are links of the same chain.[36] Like previous international legal instruments, the WCT does not have a definition of a software or a computer program. However, during the preparatory work it was agreed that the definition of a computer program would be the one introduced in the WIPO Model Provisions on the Protection of Computer Programs, which defines computer program as

[32] International IP Protection of Software, *WIPO publication*, p.5
[33] International IP Protection of Software, *WIPO publication*, p.7
[34] Article 4 of the *World Intellectual Property Organization Copyright Treaty*, December 20 1996, entered into force March 6 2002, [The WIPO Copyright Treaty or WCT], accessed at http://www.wipo.int/treaties/en/text.jsp?file_id=295166
[35] Agreed Statement 3 on Article 4 of the WCT
[36] International IP Protection of Software, *WIPO publication*, p.5

> a set of instructions capable, when incorporated in a machine-readable medium, of causing a machine having information-processing capabilities to indicate, perform or achieve a particular function, task, or result.[37]

This definition further became a basis for definitions of software programs included in many national laws.[38] The meaning of the WCT, however, is much more than simply clarification of definitions. The treaty is trying to deal with the issues which became relevant for the copyright protection in the context of digital environment, new technological developments, and convergence of information and communication technologies.[39] Some authors claim that the main accomplishment of the WCT is the introduction of the right to communicate to the public in the Article 8 of the treaty.[40] The article states that:

> authors of literary and artistic works shall enjoy the exclusive right of authorizing any communication to the public of their works, by wire or wireless means, including the making available to the public of their works in such a way that members of the public may access these works from a place and at a time individually chosen by them[41]

Even though the word internet is not mentioned in this provision of the WCT expressly, it is clear that it refers to the right of the author to publish and allow downloads of the software through the internet. In addition to that, Article 11 and Article 12 of the WCT are important in creating framework for digital rights management (hereinafter referred to as the "DRM") and prohibition of circumvention of DRM technology.[42][43] DRM is basically the technology which allows to prevent unauthorized use of digital products, including computer software, and to control the process of copying of the products.[44] Consequently, circumvention of DRM technology refers to the usage of technical means to bypass the DRM protection. The notion of DRM and especially

[37] International IP Protection of Software, *WIPO publication*, p. 3
[38] Ibid.
[39] Preamble of the WCT
[40] Tihomir Katulic, "Protection of Computer Programs in European and Croatian Law – Current Issues and Development Perspective", 2015, accessed at hrcak.srce.hr/file/206042, (hereinafter referred to as "Tihomir Katulic"), p. 12
[41] Article 8 of the WCT
[42] Article 11 of the WCT
[43] Article 12 of the WCT
[44] Digital Rights Management, http://searchcio.techtarget.com/definition/digital-rights-management, accessed on March 30, 2017

introduction of sanctions for the circumvention played a big role in the development of new services of digital products distribution via internet. By using DRM technologies and relying on prohibition of circumvention, rightsholders got an opportunity to distribute their products in massive amounts without having to incur expenses on the production of copies. In general, the WCT had a major effect on the intellectual property protection and management in the era of internet. Some critics say that despite all these efforts, internet piracy is still one of the most widespread online activities.[45] With that being true, still the WCT and specifically its provisions related to digital environment had a major effect on the development of different national copyright laws, including the context of legal protection of software.[46]

1.3. EU legal framework

When it comes to the EU legal framework, the issue is often about lack of harmonization among member states in one or another particular area. The software protection was not an exception until certain period of time. Even though copyright was a generally accepted mechanism for software protection in Europe for some time, before 1991 there was no common understanding among member states with regards the issue of how exactly and to what extent copyright protection works in relation to the software. With the development of software industry, the need for the common approach among member states became obvious. Thus, there was a decision to harmonize the respective regulation.

The process of harmonization has started with the adoption of *Council Directive 91/250/EEC of 14 May 1991* (hereinafter referred to as the "Directive") on the legal protection of computer programs.[47] By the time of its introduction, only five member states had clear copyright protection in their regulation in relation to computer programs.[48] The need for harmonization was

[45] Tihomir Katulic, p. 16
[46] Tihomir Katulic, p. 12
[47] *Council Directive 91/250/EEC of 14 May 1991 on the legal protection of computer programs*, May 14 1991, Council of the European Union, entered into force May 16, 1991, [Council Directive 91/250/EEC], accessed at http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex:31991L0250
[48] Tihomir Katulic, p. 17

urgent since the industry was developing really fast and there was a need for respective regulation. The preamble of the Directive states that the reasons for its adoption are absence of clear protection in member states, the need for protection of resources invested in creation of the computer programs, and the importance of the industry for the Community's industrial development.[49] The definition of computer program under the Directive includes:

> programs in any form, including those which are incorporated into hardware; whereas this term also includes 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.[50]

Article 6 of the Directive states that there is a possibility for decompilation of a computer program without the authorization from the rightholder in cases when it is needed to ensure the interoperability of the independently created computer program.[51] The Directive also regulates the issue of authorship of the computer program. According to the Article 2, the author of the computer program is either a natural person who created it, or, in case the respective legislation allows, a legal person designated as a rightholder.[52]

Further EU regulation related to computer programs continued the process of harmonization in different specific aspects, such as rental and lending rights, e-commerce, terms of copyright protection, enforcement of intellectual property rights, use of orphan work, and some others.[53] However, it was mainly Council Directive 91/250/EEC of 1991 which set the current EU legal framework and approach towards the legal protection of software and entrenched copyright as the main available tool.

[49] Preamble of the *Council Directive 91/250/EEC*
[50] *Council Directive 91/250/EEC*
[51] Article 6 of the *Council Directive 91/250/EEC*
[52] Article 2 of the *Council Directive 91/250/EEC*
[53] Tihomir Katulic, p. 20

1.4 Advantages and drawbacks of the copyright approach

After establishing that the main international legal instruments and EU legal framework provide for the copyright protection for computer programs, one should identify the main advantages and drawbacks of such approach, especially compared to the patent protection, which is discussed in the Chapter II of the present work.

The first advantage of the copyright protection is its availability from the moment of the creation of the computer program. Formal registration is not required to obtain the protection. Consequently, there are no time and material costs. Second, giving the fact to the number of parties to the Berne Convention, the TRIPS Agreement, and the WCT, copyright provides practically worldwide recognition and protection of rights. Third, despite that it may vary from country to country, the minimum duration of protection under copyright is fifty years from the death of the author. However, taking into account the speed of the industry development, there are many doubts about the practical need and advantage of such duration.

The opponents of the pro-copyright approach towards software protection may claim that the main disadvantage of the copyright protection overrides all the potential advantages. They claim that copyright cannot simply provide adequate protection to the software. This is because, unlike usual objects of the copyright protection, like novels or poems, for example, software has not only its textual representation in the form source and object code, but also has a functional / utilitarian part.[54] It performs certain functions, solves certain problems in its own way. Moreover, when it comes to problem-solving part of the software, it is true that functionally the same software can be created with the use of different programming language.[55] Thus, the problem is that copyright protects software from direct copying, while the underlying idea and unique function remain unprotected.

[54] Alan Story, "Intellectual Property and Computer Software – A Battle of Competing Use and Access Visions for Countries of the South", UNCTAD - ICTSD Project on IPRs and Sustainable Development (hereinafter referred to as "UNCTAD – ICTSD Project on IPRs), p. 10

[55] What is code? *The Economist*

1.5 Computer-implemented inventions

Though the EU approach towards the legal protection of software is pretty clear pro-copyright one, it is not possible to speak about the full understanding of the EU framework without the references to the European Patent Convention (hereinafter referred to as the "EPC") and the concept of computer-implemented inventions. According to the EPC, computer programs are not patentable as such.[56] However, there is a concept of computer-implemented invention, which is essentially an invention, "which involves the use of a computer, computer network or other programmable apparatus, where one or more features are realized wholly or partly by means of a computer program."[57] To qualify for an invention, the computer-implemented invention must satisfy the requirements for novelty, inventive step, and industrial application.[58][59][60] Taking into account the fact that in many cases software goes hand in hand with the device, with performs the functional part of the software, on the practical level it gives lots of possibilities for potential patentability. Though EU still does not expressly recognize patentability of computer software, the extensive practice of the European Patent Office (hereinafter referred to as the "EPO") with regards to computer-implemented inventions shows that to a certain degree one can speak about the software patentability within the context of EU approach towards the legal protection of software.[61]

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Views on the legal mechanisms for the protection of software largely depends on the understanding of software as an object. First, the present Chapter provided the widely-accepted view on software as on set of instructions (source code), written in one or another programming

[56] Patents for software? European Law and Practice, European Patent Office official web-site (hereinafter referred to as "EPO publication"), https://www.epo.org/news-issues/issues/software.html, accessed on April 5, 2017
[57] Ibid.
[58] Article 54 of the *European Patent Convention*, 5 October 1973, [the EPC], entered into force 7 October 1977, accessed at http://www.epo.org/law-practice/legal-texts/html/epc/2016/e/index.html
[59] Article 56 of the EPC
[60] Article 57 of the EPC
[61] EPO publication

language, or represented in a binary form (object code). Thus, software is viewed similarly to the literary works. Then, the Chapter presented the respective development of international legal framework (Berne Convention, TRIPS Agreement, WCT), development of EU legal framework in this regard (Council Directive 91/250/EEC), discussed advantages and disadvantages of the pro-copyright approach, and, finally, gave attention to the idea of patentability of software in the EU context, in the form of computer-implemented inventions.

Chapter II – US approach to the software protection (Pro-patent)

With all due respect to the EU software industry and its respective legal framework, the USA is historically and currently a widely-regarded world leader in the context software industry. That is why it is not surprising that all the major milestones in relation to both software production and software protection actually originated in the USA and only after had moved to Europe and the rest of the world. The present Chapter discusses the history and current state of the US approach towards the issue of software protection. First, it introduces the copyright protection for software in the USA, which despite being a widely acknowledged pro-patent legal system, is actually a place where the concept of copyright protection for software appeared first. Then, the Chapter discusses the issue of patent protection for software in the USA, its emergence, and current state. In doing so, not surprisingly, it relies on a number of major court cases. Finally, the Chapter covers the issue of Advantages and drawbacks of the patent protection approach.

2.1 Copyright protection for software in the USA

Even though the present work, as well as many other works, presents the US approach as a pro-patent one, it should not cancel the fact that, first, copyright protection for computer programs originated in the USA, and, second, it is still an available tool in the system. At the very beginning of the software era in the USA, there was actually no or very low interest in any type of protection for intellectual property rights. However, with the development of the industry, increasing amount of investments involved, the need for the proper protection mechanisms became obvious. Since the 1960s, the US Copyright Office begin to accept software for copyright protection, by allowing authors/creators of the software to submit a source code for the registration.[62] The further big step was taken in the 1980's when due to the activities of National Commission of New Technological Uses and Copyrighted Works, the scope of protection for

[62] Rosa Maria Ballardini, "Intellectual Property Protection For Computer Programs. Developments, Challenges, and Pressures for Change." PhD Thesis. Hanken School of Economics. Helsinki. 2012 (hereinafter referred to as "Rosa Ballardini"), p. 19

computer software was clearly defined, and consequent amendments to the US Copyright Act took place to set the official copyrightability for computer software.[63]

It should be noted that copyright protection of software is not a remnant of the past in the USA. In the recent *Oracle vs. Google* case the US Court of Appeals for the Federal Circuit not just reconfirmed the copyright protection for software but also clarified the issues related to abstract, non-literal parts of software and established the possibility for copyright protection for them.[64]

2.2 Why patent protection for software?

However, despite being a pioneer in the copyright protection for software, currently the USA is mostly associated with its pro-patent approach towards the software protection. Going back to the already mentioned basic definition of software, which is a "the set of instructions or programs, instructing the computer to do specific tasks", now the attention should be put not on the "set of instructions" part but on "to do specific tasks part."[65] That is where the dual nature of the software comes into play. Like it was mentioned in Chapter II, copyright fails to protect the functional / utilitarian part of the software. Copyright protects software from direct copying, while the underlying idea and unique function remain unprotected. That is one of the main reasons for the appearance and development of software patents.

2.3 US legal framework: case law

As it was previously noted, patent protection was not always an available option for the rightholders to protect their products. Considering the fact that the USA is a common law state, where court decisions have a law-making power, it is expectable that the notion of patentability emerged from the relevant case law. However, at the early stages of the industry development, court decisions rejected the patentability of software. One of the main famous examples is *Gottschalk v. Benson* case of 1972, where the Supreme Court viewed the software as a numerical

[63] Rosa Ballardini, p. 19
[64] *Oracle America, Inc. v. Google*, Inc. Accessed at https://www.eff.org/cases/oracle-v-google.
[65] Definition – What does software mean? *Techopedia*, accessed on March 25, 2017, https://www.techopedia.com/definition/4356/software

algorithm, and provided that as such it is not a patentable subject matter.[66] However, later in 1981 in *Diamond v. Diehr*, which is considered to be the key case for the patentability of software, the Supreme Court established that software can be patentable.[67] Further decisions in such cases as *State Street Bank and Trust Company v. Signature Financial Group, Inc. (1998), Bilski v. Kappos* (2010), *Alice Corp. v. CLS Bank International (2014),* and other cases clarified and specified the scope of the protection.[68] As a result, now, unlike in other places of the world, software is not excluded from the category of patentable subject matter, and it can be easily patented, as soon as it satisfies the usual requirements for novelty, non-obviousness, and usefulness.[69]

2.4. Advantages and drawbacks of the patent approach

Like it was many times pointed out, the main advantage of the patent approach is that it provides more protection, by protecting the software not from direct copying, but protecting the underlying idea and function. Another common opinion is that the availability of software patents encourages companies to invest more in research and development.[70] This is because they are now surer that their idea is not going to be stolen. Consequently, there is an overall development of the industry. However, some scholars argue that actually software patents have nothing to do with the rapid development of the industry and, on the contrary, strategic patenting and patent trolling might have an adverse effect on the development of the software industry.[71]

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The USA is with a large margin the world's leader in the software industry. It is questionable and arguable whether it has anything to do with the established legal framework in relation to the computer programs. Without going into the details of this discussion, the present

[66] Gottschalk v. Benson 409 U.S. 63 (more). 93 S. Ct. 253; 34 L. Ed. 2d 273; 1972 U.S. LEXIS 129; 175 U.S.P.Q. (BNA) 673. Accessed at https://supreme.justia.com/cases/federal/us/409/63/case.html
[67] Diamond v. Diehr. 450 U.S. 175. 101 S. Ct. 1048; 67 L. Ed. 2d 155; 1981 U.S. LEXIS 73; 49 U.S.L.W. 4194; 209 U.S.P.Q. (BNA) 1. Accessed at https://supreme.justia.com/cases/federal/us/450/175/case.html.
[68] Calvin Walden and Jeffrey Denndhardt, "Copyright and Patent for Computer Software: How Has the Landscape Changed?", Intellectual Property Today, 2015
[69] Rosa Ballardini, p. 21
[70] James Bessen and Robert. M. Hunt. "The Software Patent Experiment." 2004.
[71] Ibid.

Chapter, first, introduces the notion of the copyright protection for software in the USA, with it being the first jurisdiction in the world to introduce such protection for the software. Then, it discusses the issues of why patent protection appeared on the stage and how it emerged and developed in the USA, through the review of the relevant case law. Finally, the Chapter pays attention to the advantages of the patent protection, such as a possibility to protect the underlying idea and the effects on the promotion of research and development, and it also brings attention to the possibility of the contrary effect, bringing adverse effect on the development of the industry.

Chapter III - Kyrgyz Republic Approach: Existing Framework and Suggestions

If there are still new developments and uncertainties with the protection of software in the world's most developed economic and legal systems, it should not be surprising that when it comes to the developing countries, such as the Kyrgyz Republic, the issue is much more unclear. The history of the Kyrgyz Republic in its present state has started just 25 years ago with the collapse of the Soviet Union and attainment of the independence by the country. That is why practically all industries in the state are still at an early stage of their evolution compared to the developed countries. Moreover, when it comes to the software industry the time should be counted down not from 1991, but from the early 2000s. Consequently, without the demand from the interested parties until certain period of time the regulation of the software industry was simply absent and now it is there but it is not clear. Nevertheless, it should be noted that when speaking about unclear regulation, the author of this work is not trying to say that the laws and other normative legal acts are poorly drafted or absent. On the contrary, there are some really good laws. The problem is with the application of those laws which is not clear. There is no established court practice. The main regulator in the field, State Agency on Innovations and Intellectual Property under the Government of the Kyrgyz Republic (hereinafter referred to as the "Kyrgyzpatent"), fails to address the issue of software protection in any manner. That is why it is not possible to say that there is a visible framework in this regard in the Kyrgyz Republic. However, there is a positive aspect of the lack of clarity. It means that while the industry is still in its infancy, the Kyrgyz Republic can still choose the approach and the legal framework for the legal protection of software without bringing major adverse effects on the current stakeholders, but affecting the future development of the industry.

First, the present Chapter introduces currently available and applicable legal framework in the Kyrgyz Republic. Second, through the series of interviews, conducted by the author, the Chapter provides the reader with the opinions of highly-qualified local professionals and helps to

establish the practical framework, answering to the question of what is happening in the industry in reality. Finally, based on the analysis of the present legal and practical frameworks, the Chapter discusses which one of the previously mentioned approaches, EU or US, is better suited for the Kyrgyz Republic and why.

3.1 Legal Framework

Since the Kyrgyz Republic is a civil law state, normative legal acts are the main source of law. Moreover, unlike in some other civil law jurisdictions, it is really hard to rely on court decisions even as a nonbinding and interpretive tool, because there is no unified system at place to get access to them. That is why talking about legal framework, one should understand that in the context of the Kyrgyz Republic, it is merely about laws and other normative acts. Surprisingly, by itself, apart from the practical implementation, the legal framework looks pretty decent. Probably, the main reason is that the Kyrgyz Republic is a party to all major international treaties in the field, including the Berne Convention since 1999, the TRIPS Agreement since 1998, and WCT since 2002.[72]

3.1.1 Law of the Kyrgyz Republic on Copyright and Related Rights

One of the main laws, which establishes the legal framework for software protection in the Kyrgyz Republic, is the Law of the Kyrgyz Republic on Copyright and Related Rights of 1998 with the last amendments coming in 2014.[73] Generally, the law regulates relations associated with the creation and use of the works of science, literature and art (copyright), phonograms, performances, resolutions, and organization of the cable broadcasting (related rights).[74] Article 2 of the law states that, among other sources, the legislation of the Kyrgyz Republic related to the copyright, in addition to the present law, includes the specific Law of the Kyrgyz Republic on

[72] Information about the Kyrgyz Republic, WIPO official web-site, http://www.wipo.int/wipolex/en/profile.jsp?code=KG, accessed on March 22, 2017
[73] *Law of the Kyrgyz Republic on Copyright and Related Rights*, [Copyright Law of the KR], entered into force 14 January 1998, last amended January 21, 2014, accessed at http://www.wipo.int/wipolex/en/text.jsp?file_id=329135
[74] Article 1 of the Copyright Law of the KR

Legal Protection of Software and Databases.[75] The law also provides the following definition of a computer program:

> Computer program - a set of instructions or rules expressed in words, numbers, codes, symbols, signs or in some other form intended for the operation of computers and other computer devices to achieve a specific goal or result.[76]

Article 7 of the law lists computer programs among other types of objects of copyright protection and expressly states in the section 2-1 that computer programs should be protected as works of literature and that such protection extends to all kinds of programs, including all application programs and operating systems, which can be expressed in any language and in any form, including source code and object code.[77] Finally, Article 25 of the law discusses the free reproduction and decompiling of computer programs.[78] Despite being pretty concise on the issue of the software protection, the Law of the Kyrgyz Republic on Copyright and Related Rights actually creates the needed legal framework. It provides the definition of a computer program and clearly states that it should be protected by copyright similar to the works of literature.

3.1.2 Law of the Kyrgyz Republic on Legal Protection of Software and Databases

To a certain extent one could say that the Law of the Kyrgyz Republic on Copyright and Related Rights was enough to create a legal framework for software protection in the Kyrgyz Republic. It clearly states that computer programs should be protected by copyright as works of literature, and, in its turn, copyright protection is circumstantially described in the law. However, taking into account all the particular qualities of a software as an intellectual property, there was a need for a separate specific piece of legislation. The Law of the Kyrgyz Republic on Legal Protection of Software and Databases of 1998 with the last amendments introduced in 2006, regulates relations related to the creation, legal protection and use of computer programs and

[75] Article 2 of the Copyright Law of the KR
[76] Article 4 of the Copyright Law of the KR
[77] Article 7 of the Copyright Law of the KR
[78] Article 25 of the Copyright Law of the KR

databases.[79] Like the Law of the Kyrgyz Republic on Copyright and Related Rights, it provides that computer programs should be protected by copyright as works of literature. However, for some reasons it provides different definition for computer program as "an objective form of representation of a set of data and commands intended for the operation of electronic computers (computers) in order to obtain a definite result."[80] Yet, on a practical level this difference does not have any effect. In addition to that the Law of the Kyrgyz Republic on Legal Protection of Software and Databases provides definitions for the object code, source code, modification, compiling, decompiling, and number of other important technical terms.[81] Though it logically follows from the fact that it is copyright protection, which is available for computer programs, the Law expressly states that computer programs are protected from the moment and the fact of their creation and that recognition and enforcement of this right do not require registration or any other formalities.[82] It also provides that copyright is valid from the moment the computer program was created and for the lifetime of the author and 50 years after his death, counting from January 1 of the year following the author's death year.[83]

One of the important features of the Law is that, despite the fact that no formal registration of a program is required, it provides for the possibility to still register the computer program with Kyrgyzpatent.[84] The procedure is regulated by the Article 14 of the Law and Rules for the Drafting, Submission and Consideration of an Application for the Official Registration of a Computer Program or a Database, approved by the government decree of October 27, 2011.[85] According to

[79] *Law of the Kyrgyz Republic on Legal Protection of Software and Databases*, [Law of the KR on Legal Protection of Software], entered into force March 30, 1998, last amended December 8, 2006, accessed at http://www.wipo.int/wipolex/en/text.jsp?file_id=237969
[80] Article 1 of the Law of the KR on Legal Protection of Software
[81] Ibid.
[82] Article 4 of the Law of the KR on Legal Protection of Software
[83] Article 7 of the Law of the KR on Legal Protection of Software
[84] Art. 13 of the Law of the KR on Legal Protection of Software
[85] *Rules for the Drafting, Submission and Consideration of an Application for the Official Registration of a Computer Program or a Database*, entered into force October 2, 2001, accessed at http://www.patent.kg/index.php/ru/legislation/sub-legislation/pravila/99-laws/subordinate-legislation/pravila/45-pravila-sostavleniya-podachi-i-rassmotreniya-zayavki-na-ofitsialnuyu-registratsiyu-programmy-dlya-elektronnykh-vychislitelnykh-mashin-ili-bazy-dannykh.html

the Rules, the application is viewed by the Kyrgyzpatent within 6 months and requires the following documentation and information from the applicant: the application itself, deposited materials identifying a computer program, including an abstract, and payment of the registration fee.[86] Deposited materials identifying a computer program should be provided in form of a source code, and the applicant should provide materials in the volume of 15 first and 15 last pages of listing (printed copy) of the source text.[87]

Therefore, it is possible to say that even though the Law of the Kyrgyz Republic on Legal Protection of Software and Databases provides the same protection as already provided by the Law of the Kyrgyz Republic on Copyright and Related Rights, it is still very important because it clarifies definitions, pays attention to certain aspects which are particularly important for computer programs, and in combination with the Rules for the Drafting, Submission and Consideration of an Application for the Official Registration of a Computer Program or a Database, provides for the registration procedure for computer programs.

3.1.3 Patent Law of the Kyrgyz Republic

Despite the fact that the current legal framework for software protection in the Kyrgyz Republic is fairly clear and provides copyright protection for computer programs, and on a practical level there are no debates as well, there is still a possibility to argue, at least theoretically, whether the current legal framework assumes the patentability of software. The Patent Law of the Kyrgyz Republic of 1998 with the last amendments introduced in 2015 regulates property, as well as related personal non-property relations arising in the territory of the Kyrgyz Republic in connection with the creation, legal protection and use of inventions, utility models and industrial designs.[88] The Article of the Law which creates a basis for software patentability debates is Article 5. First, it provides the usual widely accepted criteria for patentability of inventions, such as

[86] Article 2 Rules for the Drafting, Submission and Consideration of an Application for the Official Registration of a Computer Program or a Database
[87] Ibid.
[88] Article 1 of the *Patent Law of the Kyrgyz Republic*, [Patent Law of the KR], entered into force January 14, 1998, last amended January 25, 2013, accessed at http://www.wipo.int/wipolex/en/text.jsp?file_id=328975

novelty, inventive step, and industrial applicability.[89] Then, it gives the list of objects which do not fall under the notion of invention. Among others it states that algorithms and computer inventions as such are not invention, however, the presence in the composition of the invention of algorithms and computers programs is not recognized as a circumstance affecting the patentability of the invention itself, if they are part of the invention.[90] It is the only time throughout the entire text of the law when computer programs are mentioned in any manner. From the first view, these provisions are replicating the relevant provisions of, for example, European Patent Treaty and, thus, the practice with regards to patentability of software and computer-implemented invention should be similar. However, in reality these provisions are can be considered as so-called "dead norms", meaning that despite being present in the text of the law, they are never or rarely used in practice. Thus, in theory there are grounds in the law, which acknowledge patentability of computer-implemented inventions, but in practice the only legal mechanism used is copyright protection.

3.2 Practical Framework

One cannot speak about understanding the approach currently followed by the Kyrgyz Republic or actually any other state, relying only on the black-letter law. Practical aspects of software protection also deserve their portion of attention. Unfortunately, in case of the Kyrgyz Republic it is not possible to rely on the court decisions. First, the number of court decisions on the issue is very limited. Second, there is no access even to those limited number of court decisions because there are still no unified system collecting and making available court decisions to the public. In addition to that, practice or opinion in the form of articles and publications from the side of Kyrgyzpatent is also unavailable. That is why in order to collect the information and determine the current practical framework of software protection in the Kyrgyz Republic, the

[89] Article 5 the Patent Law of the Kyrgyz Republic
[90] Article 5 of the Patent Law of the Kyrgyz Republic

author of this work has conducted three interviews with highly qualified Kyrgyzstani professionals working in the fields of software production and intellectual property law, namely:

- Aleksei Vandaev – a certified Trademark and Patent Attorney, Senior Lawyer and Head of the IP Law practice of Kalikova & Associates Law Firm, the largest and one of the leading law firms in the Kyrgyz Republic.[91]
- Saodat Shakirova – a certified Trademark and Patent Attorney, Partner of the Arte Law Firm, the leading law firm in the Kyrgyz Republic focusing specifically on intellectual property issues.[92]
- Azis Abakirov – CEO of the Unique Technologies software development company, co-founder and chairman of the Kyrgyz Software and Service Developers Association, initiator of the creation of High Technologies Park tax regime for software developers in the Kyrgyz Republic.[93]

Views and opinions presented by the abovementioned professionals helped to understand how the software is actually protected in the Kyrgyz Republic, what the interests and demands of the market are, and what and how can be improved.

3.2.1 Legal Practice

Speaking about the legal practice and their own practice within their respective law firms, both Aleksei Vandaev and Saodat Shakirova noted that it is not possible currently to talk about any established practice in the industry and that demand from the rightsholders for the legal protection of software is relatively low.[94][95] In the opinion of Ms. Shakirova, one of the main motives for those, who eventually decide to register their computer programs within the framework of the Law of the Kyrgyz Republic on Legal Protection of Software and Databases, is simply to have a better evidence base in case of a dispute.[96] Mr. Vandaev adds that another reason for

[91] Profile of Aleksei Vandaev, Kalikova & Associates Law Firm official website, http://www.k-a.kg/eng/aleksei-vandaev-senior-lawyer, accessed March 12, 2017
[92] Arte Law Firm official website, http://www.arte.kg/en/about/, accessed March 12, 2017
[93] Malika Bayaz, "Aziz Abakirov, Kyrgyz High-Tech Park: To develop the ICT sector, it is necessary to work openly", Digital Report project official website, https://digital.report/azis-abakirov-pvt-kyrgyzstan/, accessed March 12, 2017
[94] Interview with Aleksei Vandaev, interview by the author, Skype interview, Budapest/Bishkek, February 3, 2017 (hereinafter referred to as "Interview with Aleksei Vandaev")
[95] Interview with Saodat Shakirova, interview by the author, Skype interview, Budapest/Bishkek, January 31, 2017 (hereinafter referred to as "Interview with Saodat Shakirova")
[96] Interview with Saodat Shakirova

software producers to go for non-binding formal registration process is to get the official certificate of registration and present it in front of the local or foreign investors.[97]

Both lawyers state that one of the main problems is that in those rare cases when there are some disputes over rights in software, courts lack expertise to analyze the merits of the case.[98][99] Mr. Vandaev brings an example of the case where two companies had a dispute over their rights in a software for mobile payment services. The employee of the company A moved to the company B and, supposedly, brought the abovementioned software from the company A to the company B. The local court heard the dispute. However, at a certain point of time the case had practically stalled, because the court did not know how to compare software of the company A and the company B. It was found out that there are no experts who can conduct such an examination.[100]

With regards to the current legal framework, Mr. Vandaev says that, of course, in many cases copyright protection is not enough to fully protect the software. For example, in cases of reverse engineering, partial copying, or copying of the idea. That is why sometimes he suggests his clients to register not only the code but also the screenshots with the user interface to ensure more protection.[101] Despite this fact, he is cautious about the idea of software patents for the Kyrgyz Republic, saying that they may not become a common tool for the software protection, mainly because of the time and costs, associated with their obtainment. However, generally, he finds the concept of computer-implemented inventions really interesting and sees a perspective in the development of this issue, because currently this practice does not exist in the Kyrgyz Republic at all.[102] Ms. Shakirova adds to that she is sure that the software industry will keep developing in

[97] Interview with Aleksei Vandaev
[98] Interview with Aleksei Vandaev
[99] Interview with Saodat Shakirova
[100] Interview with Aleksei Vandaev
[101] Interview with Aleksei Vandaev
[102] Interview with Aleksei Vandaev

the Kyrgyz Republic and, consequently, legal practice will adjust respectively, but with the current market demand there is no need for any substantial changes.[103]

3.2.2 Industry Practice

It is important to understand that the legal practice is always a reaction towards market needs, rather than a separate, independent phenomenon. Thus, to understand the reasons behind current state of affairs, one should approach not the legal service providers, but the main interested stakeholders, producers of computer software. According to Azis Abakirov, most software producers are practically not interested in the legal aspects of protection of their products, mainly because more than 80% of all software products developed in the Kyrgyz Republic are exported to other countries.[104] Moreover, it is not just an established reality. It is also a requirement set by the Law of the Kyrgyz Republic on High Technologies Park for those software producers, who wish to be eligible for the preferential tax treatment. According to the Article 6 of that law, in order to be a resident of the High Technologies Park and fall under its special tax regime, the software producer must fulfill the following criteria:

> After one year from the date of the final registration, not less than 80% of goods and services must be exported and / or no less than 80% of HTP resident income should be earned as a result of exports of goods and services.[105]

Most software developers in the Kyrgyz Republic, both individuals and business entities, says Mr. Abakirov, work as an outsourcing or outstaffing for the foreign clients. That is why most of the legal aspects, including the protection of software, are solved by the clients in their respective jurisdictions.[106] Thus, in the present reality, the issue of legal protection of software is not the most urging for the Kyrgyzstani software producers. Mr. Abakirov agrees that in many situations copyright protection is not enough, because in this case the actual idea behind the

[103] Interview with Saodat Shakirova
[104] Interview with Azis Abakirov, interview by the author, Facebook Video Chat interview, Budapest/Bishkek, February 6, 2017 (hereinafter referred to as "Interview with Azis Abakirov")
[105] Article 6 of the *Law of the Kyrgyz Republic on High Technologies Park*, [Law of the KR on HTP], entered into force July 8, 2011, accessed at http://cbd.minjust.gov.kg/act/view/ru-ru/203327?cl=ru-ru
[106] Interview with Azis Abakirov

software is not protected.[107] That is why he finds the idea of patents for computer-implemented inventions interesting in its perspective; however, he raises doubts with regards to its possible spread and popularity, mostly because of the material costs associated with the patent obtainment, which are pretty high for the just emerging software industry of the Kyrgyz Republic.[108]

3.3. Suggestions

Based on the overview of two different approaches towards the legal protection of software, and also analysis of available legal and practical frameworks in the Kyrgyz Republic, this work provides number of conclusions and suggestions for the state with regards to the potential approach towards the issue of legal protection of computer software.

First, the research has shown that actually the legal framework present in the Kyrgyz Republic is comparable to the respective EU legal framework. The Law of the Kyrgyz Republic on Copyright and the more specific Law of the Kyrgyz Republic on Legal Protection of Software and Databases expressly provide for the copyright protection for computer programs. In addition to that, like the European Patent Convention, Patent Law of the Kyrgyz Republic excludes from patentability computer programs as such, but potentially covers computer-implemented inventions. The difference is that while EPO has extensive practice on this issue, Kyrgyzpatent never made an attempt or had to address this issue. Thus, there is a big, but so far undisclosed, potential in developing this practice in the Kyrgyz Republic. The idea, unanimously expressed by the interviewed professionals, is that at the present moment they find the patentability of computer-implemented inventions potentially interesting and perspective for the Kyrgyz Republic, but so far they are unaware how to deal with in practice and how the regulator will react to it. Second, from the practical point of view, working mostly for the foreign markets, the software producers in the Kyrgyz Republic are not paying much attention to the issues of legal protection of computer software on the local market. Consequently, local law firms do not have developed practice in this

[107] Interview with Azis Abakirov
[108] Interview with Azis Abakirov

regard, and, in the rare cases when courts have to deal with this issue, they lack the required expertise. Third, practicing professionals think that, even in case of its existence, at the present moment and in the nearest future patent protection would not be popular within the software industry in the Kyrgyz Republic, because of the time and material costs associated with the patent obtainment, which are pretty high for the just emerging software industry of the Kyrgyz Republic. Based on the abovementioned, the author of this work draws the following conclusions and suggestions:

(1) The Kyrgyz Republic should stick to its present pro-copyright approach and legal framework in the protection of software. There is no practical need to introduce a separate patent protection framework.

(2) However, the patent protection practice might still be developed through the usage of currently "dead" provision of the Patent Law of the Kyrgyz Republic on computer-implemented inventions.

(3) Kyrgyzpatent, as a regulator, should provide its official opinions and clarifications on the issue of computer-implemented inventions so that the industry can make some expectations and understand the view of the regulator, on how this concept is can potentially operate within the Kyrgyz Republic.

(4) Local courts should develop their expertise in the cases related to recognition and enforcement of the rights in software, and generally in the issue of legal protection of software, if not through the case law, then through some training programs.

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Comprehensive legal framework is essential for the functioning of any industry. First, the present Chapter provided the overview of the available legal framework in the Kyrgyz Republic in relation to the legal protection of software (Law on Copyright and Related Rights, Law on Legal

Protection of Software and Databases, Patent Law of the Kyrgyz Republic). Second, the Chapter presented opinions of highly-qualified local professionals (Aleksei Vandaev, Saodat Shakirova, and Azis Abakirov), which helped to establish the practical framework and answer to the question what is happening in the industry in reality. Finally, the Chapter provided number of suggestions to the Kyrgyz Republic, namely stick to the present pro-copyright legal framework, develop the usage and understanding of the concept of computer-implemented invention, develop the expertise of the courts in relation to the disputes on the issue of legal protection of software.

Conclusion

Software industry is actively growing and developing. It is true both for the developed system, like the EU and the USA, and developing, like the Kyrgyz Republic. Without any doubts, the scales and level of development are incomparable between developed and developing systems. However, the importance of the software industry is very high in both scenarios. In the recent years, government of the Kyrgyz Republic provides more incentives for the software producers in the country, for example, in the form of tax preferences. Apart from it, increasing number of people, especially among the young population, are willing to join the field. Everyone understands that it is one of the main ways for the most landlocked country in the world with the absence of any substantial natural resources and collapsed traditional industries to develop. As a logical sequence, apart from the emerging of a new industry, apart from the questions of positive impact and potential growth, the issue of regulation of that industry appears on the stage. Indeed, clear and comprehensive legislation is one of the keys for the future success of the industry. Especially, when it comes to the regulation of protection of rights of the creators / rightholders of the software. These rights are lying at the roots of the market economy. Without them it is not possible to basically conclude any transactions, buy or sell software products. However, when it comes to software, it becomes particularly challenging to determine what type of regulation and protection should be applied and how it should be applied. This is because of dual nature of the software as an object. From one side, it can be described as a literary work and from the other side, one can pay specific attention to the technical function. This is a basic underlying reason for the debates over the type of protection which should applicable to the software. Hence, this paper researched two main approaches, EU (pro-copyright) and US (pro-patent), with regards to the issue of software protection, and tried to determine which of the approaches is more applicable to the Kyrgyz Republic reality.

Chapter I of the work provided the widely-accepted view on software as on a set of instructions, written in one or another programming language in the form of a source code, or

represented in an object code. It showed how and why software is viewed similarly to the literary works, accordingly explaining how copyright protection became available for it. Then, Chapter II presented the respective development of international copyright legal framework, namely referring to the Berne Convention, TRIPS Agreement, and WCT. It further discussed the development of EU legal framework in this regard, focusing on the Council Directive 91/250/EEC. Then, it discussed advantages and disadvantages of the pro-copyright approach, stating that advantages include absence of formal registration requirements, worldwide recognition, and, arguably, duration of the protection, and pointing out that the main disadvantage is that copyright does not protect the idea behind the software, which sometimes is more important and valuable than a particular literary representation. Finally, Chapter I gave attention to the idea of patentability of software in the EU context, in the form of computer-implemented inventions, for the purposes of full understanding of the EU approach as a whole.

Chapter II of this work introduced the notion of the copyright protection for software in the USA context, pointing that it was the first jurisdiction in the world to introduce such protection for the software. Then, it discussed the issues of why patent protection appeared on the stage and how it emerged and developed in the USA, through the review of the relevant case law. Finally, the Chapter paid attention to the advantages of the patent protection, such as a possibility to protect the underlying idea and the effects on the promotion of research and development, and it also brought attention to the possibility of the contrary effect, bringing adverse effect on the development of the industry.

Chapter III of the work Chapter provided the overview of the available legal framework in the Kyrgyz Republic in relation to the legal protection of software, focusing on the Law of the Kyrgyz Republic on Copyright and Related Rights, Law of the Kyrgyz Republic on Legal Protection of Software and Databases, and Patent Law of the Kyrgyz Republic. After that, the Chapter presented opinions of highly-qualified local professionals, namely IP lawyers Aleksei Vandaev and Saodat Shakirova and head of a software producing company Azis Abakirov, thus,

establishing the practical framework and answering to the question what is happening in the industry in reality. The analysis of the available legal framework, comparison with the approaches of the developed systems, and research on the practical situation in the Kyrgyz Republic, allowed the author of the work to draw certain conclusion for the last Chapter and for the whole thesis paper, and provide suggestions to the Kyrgyz Republic in relation to its legal framework for software protection:

(1) The Kyrgyz Republic should stick to its present pro-copyright approach and legal framework in the protection of software. There is no practical need to introduce a separate patent protection framework.

(2) However, the patent protection practice might still be developed through the usage of currently "dead" provision of the Patent Law of the Kyrgyz Republic on computer-implemented inventions.

(3) Kyrgyzpatent, as a regulator, should provide its official opinions and clarifications on the issue of computer-implemented inventions so that the industry can make some expectations and understand the view of the regulator, on how this concept is can potentially operate within the Kyrgyz Republic.

(4) Local courts should develop their expertise in the cases related to recognition and enforcement of the rights in software, and generally in the issue of legal protection of software, if not through the case law, then through some training programs.

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Sometimes it is argued whether such dynamic and fast developing industry as software should be at all regulated by the copyright and patent laws, since both approaches are limited in their capacities and do not fully reflect the need of the market. However, the author of this work believes that the regulation, especially related to the protection of rights of the creators /

rightholders, is essential for the proper operating of the industry. Until the present moment no better approach was developed. Both copyright and patent approaches have their advantages and limitations, and are more or less applicable to certain situations and systems. For now, the better one for the Kyrgyz Republic is a pro-copyright approach followed by the EU, with potential expansion towards patentability of software through concept of computer-implemented inventions.

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