Licensing as a form of commercialization of intellectual property in the intelligent transport systems (ITS) sector in Slovakia

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Abstract— The importance of intellectual property rights is coming to the forefront on a global scale. Licensing, as one of the basic forms of commercialization of intellectual property, is a traditional yet relatively complicated form of technology transfer, which creates a vast network of interactions between the licensor and the licensee, or third parties whose rights may be affected by the exercise of the license. The complexity of licensing relationships in the field of Intelligent Transport Systems is often unpredictable at an early stage of new inventions or other innovative industrial property items, as it usually depends on the specificities of these items, which will only become apparent during their use. In this paper, we portray different types of licenses and the process of a license agreement formation applied to the ITS sector.

Index Terms— Licensing, intellectual property, commercialization, license agreement, intelligent transport systems, Civil Code, Commercial Code.

1 INTRODUCTION

Commercialization is a process leading to the financial evaluation of the resulting research output and development. The commercialization of research and development results is the selection of suitable ideas, research and development results of technologies, their implementation into practice or the transfer of research and development results into business practice.

The choice of an appropriate method of commercialization is one of the key steps in the process of technology transfer. Each of these methods of commercialization has its advantages and disadvantages, and the degree of risk is also different.

The existing literature on technology commercialization is abundant (Gans and Stern, 2003; Kaplan, 1999; Walsh et al., 2002; Katzy and Crowston, 2008; Thukral et al., 2008; Chen, 2009; Markman et al., 2008, He et al., 2006, Kasch and Dowling, 2008).

The most common forms of commercialization in the field of intelligent transport systems (ITS) are the transfer of rights or the granting of a license. In the case of intellectual property law, the transfer is applied mainly in the field of industrial property rights and is particularly advantageous for the acquirer, who thus acquires all rights related to the intellectual property object (e.g. transfer of patent law, which changes the patent owner). When the license is granted, the right holder, as the licensor, retains their intellectual property right, but the right to use the intellectual property is granted. Licensing, therefore, means granting the right holder's consent to the licensee to use the intellectual property. Unlike the transfer of intellectual property rights, when granting a license, the right holder retains all intellectual property rights but is obliged to tolerate the use of the intellectual property object by another person within the scope of the consent granted.

2 LICENCE AGREEMENT

The license agreement is clearly the most used type of contract in the field of intellectual property rights management. Under the license agreement, the right holder exclusively consents to the use of the intellectual property to which they exercise their rights. According to the World Intellectual Property Organization, license agreements provide the following benefits to the parties in terms of technology transfer:

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- utilization of the commercial potential of an industrial property without its direct application in the production process - a company that cannot or does not want to be involved in the production process could benefit from technology licensing by relying on larger production volumes, sales distribution, local knowledge and management and additional expertise of one or more licensing partners,
- preservation of ownership of the industrial property - granting a license allows the licensor to retain intellectual property rights in the technology and to reap the economic benefits, usually in the form of royalties;
- easier entry into new markets - licensing could also help companies commercialize their technology or expand their current operations into new markets more efficiently and easily;
- ensuring control of innovation - licensing can provide some degree of control of innovation as well as the direction and evolution of technologies where mutual collaboration is important;
- prevention/resolution of industrial property disputes - a license agreement can also provide the means to turn an infringer or a competitor into an ally or partner while avoiding intellectual property litigation that can have an uncertain outcome or be costly and time consuming;
- rapid access to technology for the acquirer - it is often necessary to launch a new product quickly. A license agreement that provides access to technologies that already exist or are almost ready, enables a company to reach a given market faster using innovative technology;
- savings of the acquirer's capital needed for research and development - a company that may not have the resources to provide its research and development can also gain access to the technical progress, needed to deliver a new or improved product, by obtaining a license.

Disadvantages or risks of licensing include:

- in comparison with other forms of commercialization, the managerial supervision over the process of technology development into a product is lower within licensing;
- the achievement of outputs may be jeopardized by unforeseen effects on the licensee, unrelated to the license;
- the licensee may compete with the licensor;
- costs of legal protection and law enforcement can be an undesirable economic burden.

Despite the difficulties with quality contractual relationships and potential risks associated with licensing, it can be stated that the advantages of licensing outweigh the disadvantages. For this reason, international licensing agreements are the most common way of transferring industrial property in the Intelligent Transport Systems environment. Considering the industrial rights, patents are most often licensed, i.e. the patent proprietor grants the rights to use their invention to the licensee. An exclusive and broad-based license agreement (for all uses, to an unlimited extent, for the entire period of protection of rights, with the possibility to grant a license and assign a license) has similar effects as the transfer of rights.
Next table, Tab. 1, shows a possible classification of the results of intellectual property (according to their nature) in a simplified form.

Tab. 1 Form of legal protection of the results of creative intellectual activity in the Intelligent Transport systems (ITS) in Slovakia

Results of creative intellectual activity	Object of intellectual property	Form of legal protection	Period of legal protection
Object, device, method of production or working procedure (including recipe)	Invention	Patent – Act No. 435/2001 Coll. on Patents	20 years
New or innovative technical solution (new product, a new substance, new production method, use for a new purpose)	Utility model	Utility models – Act No. 517/2007 Coll. on Utility models	max 10 years
Aesthetic elements of the subject, ornamental elements	Product design	Design- Act No. 444/2002 Coll. On Designs	max 25 years
Name, logo - word or figurative signs that distinguish the goods and services of one person from the goods and services of another person	Trademark	Trademark – Act No. 506/2009 Coll. On trademarks	10 years of protection, can be prolonged always for other 10 years

Production-technical knowledge, experience with the optimal course of a certain process, technology, recipes, knowledge and experience from a wide range of technology, but also trade and business. The concept of know-how also includes unprotected (secret) inventions, results of research and development and other results of creative activity.	Know-how	Secreting – following the Commercial Code (as a trade secret).	Unlimited, it all criteria of protection are met
Photography, painting, drawing, statue, ...	Art work	Act No 185/2015 Coll. Copyright Act.	During the life of an author and 70 years after their death
Software	Computer program	Act No 185/2015 Coll. Copyright Act.	During the life of an author and 70 years after their death
Proceedings, newspapers, magazines, encyclopedias, anthologies, bands or exhibitions	Database	Act No 185/2015 Coll. Copyright Act.	Depend on a database type – during the life of an author and 70 years after their death or 15 years after it was formed or opened to the public (depend on which was earlier)

Source: Own processing

2.1 License agreement according to the Copyright Act and Commercial Code

Regarding the granting consent to the use of the intellectual property (licensing), it is necessary to distinguish between two basic options of implementing this procedure - a license agreement under § 65 of the Copyright Act and a license agreement for industrial property under § 508 of the Commercial Code. The license agreement under the provisions of the Copyright Act may be applied to grant consent to the use of copyright (including computer programs), artistic performance, sound recording, audio-visual recording, broadcasting and database. On the other hand, the license agreement according to the provisions of the Commercial Code regulating the formation, termination and exercise of the right under this agreement can be applied only to objects of industrial property.

The legal regulation of licenses for industrial property objects follows § 508 et seq. of Commercial Code. § 509 par. 1 of the Commercial Code obliges the registration of the license with the office, if required by a special regulation in the interest of protection of third parties. However, the Commercial Code did not classify this type of contract among absolute transactions on the basis of § 261 par. 3 of the Commercial Code, i.e. it means that if the license agreement was concluded between the originator as a natural person and a business entity, it will be necessary in accordance with the provisions of § 262 par. 1 and 2 of the Commercial Code to agree in writing that the entities agree that their contractual relationship will be governed by the Commercial Code. It is evident that license agreements on the industrial property can be concluded under the Civil Code in the form of an innominate agreement based on § 51 of the Civil Code, as the Civil Code does not contain a license agreement as a separate contract type. [8] A license agreement for industrial property objects concluded in accordance with the Commercial Code must be in writing. Most of the provisions are dispositive, which allows a great deal of contractual freedom for the parties concluding the license agreement.

Both types of contractual agreements concluded under the Copyright Act or the Commercial Code are largely related. However, in particular, the licensing agreement for industrial property objects shows a considerable number of peculiarities which result from the nature of the individual industrial property objects.

The individual conditions of licensing agreements for individual objects of industrial property are regulated in special legal regulations. The special regulation contains a definition of certain general conditions for the licensing of industrial property rights, such as the effects of a license agreement or a restriction on the transfer of an acquired license.

The handling of copyright has its specifics compared to industrial property rights. The fundamental difference is that copyright cannot be transferred, which means that it cannot be transferred to another person or waived. License agreements for intellectual property items concluded under the Copyright Act are also important objects for the technology transfer in the ITS environment.

The essentials of the license agreement under the Copyright Act are the method of use of the subject of protection, the scope of the license, the period for which the license is granted and the remuneration[1], unless the parties agreed to grant a license free

[1] In the case of a remunerated license agreement, the subject of the agreement is also the obligation of the licensee to pay remuneration. The subject of the license agreement is the regulation of mutual rights and obligations of the contracting parties.

of charge. The content of the license agreement or of its part may also be determined by the reference to the license conditions that are known to the parties or are available to them at the time of concluding the license agreement. Compared to the industrial and legal license agreement, a written form of the agreement is required only if an exclusive license is granted.[2] The license agreement for the area of copyright is directly regulated by the Copyright Act.

2.2 Specifics of industrial property licensing agreements

The basic types of licenses are exclusive license, non-exclusive license and sole license. In the case of this division of licenses, it is a division according to the scope of rights that are the subject of the license agreement. The choice of the type of licensing agreement is an important decision, which should be based on the strategic concept of managing the company's industrial property. The choice of an appropriate strategy of the commercialization of industrial rights in a form of licensing is a determinant of the successful exploitation of the commercial potential of the items making up the industrial property portfolio and should be based on careful consideration of not only commercial and legal but also technical aspects of the licensed item.

In the case of an exclusive license, the licensor is not entitled to conclude another license agreement for the same subject of industrial property and the provider cannot exercise the industrial property rights, therefore granting an exclusive license is very close to a transfer of rights.[3] The choice of an exclusive license needs to be carefully considered, as it constitutes a restriction of the owner's exclusive rights as of a licensor of the industrial property right of the given subject. "If the research is of strategic importance to the institution, it is not appropriate to grant exclusive licensing for such intellectual property, as it could restrict or completely block further research activities in this area." [6] The benefits of exclusive licensing agreements usually include higher licensing fees. A non-exclusive license, on the other hand, means that the licensor may grant the license to another person and may exercise the rights to the licensed industrial property themselves.

In the context of the commercialization of industrial property rights and the widest possible use of the commercial potential of certain industrial property rights, sub-licensing options are usually possible in connection with exclusive licenses. Granting a sublicense is excluded by § 511 par. 2 of the Commercial Code. However, given that it is not a mandatory provision, it can be excluded by the agreement of the parties concerned and thus allows the acquirer to grant a sublicense to other entities - the sublicense will be provided on the basis of an innominate agreement in accordance with § 269 par. 2 of the Commercial Code.

A non-exclusive license is the preferred form of licensing because it allows the provider to enter into license agreements for the same industrial property with multiple acquirers. Undoubtedly, one of the positives of non-exclusive licensing agreements is the division of risks and benefits between several acquirers. At the same time, however, there is an increased risk of leakage of secret information or misuse of the acquirer's access to technology. The use of a non-exclusive license is appropriate if the licensed industrial property can become a standard that will be widely used within a certain market segment.

The granting of a semi-exclusive license means that the provider may not license the same industrial property to another person, but may exercise the industrial property rights themselves [7]. If the contract does not determine the type of the agreement, § 508 et seq. of the Commercial Code, them it is a non-exclusive license and the provider may continue to use the industrial property themselves and may conclude a license agreement for the same industrial property to the same extent in the same territory with other persons.

By registering the license with the office, the contract takes effect against third parties, inter parties the contract takes effect at the moment specified in the contract.

3 IP PROTECTION IN ITS SECTOR IN SLOVAKIA

The level of protection of intellectual property in the Intelligent Transport Systems sector is shown in Tab. 2 which portrays the number of patent applications in the Slovak Republic in 2019 in individual fields of industry. Patent applications in the field of Transport reached a high level of 6.84 % (16 applications) of the total number of applications, which means the fourth-best sector from all assessed areas.

To compare, in the case of utility model applications, the sector of transport is the best-ranked sector, which represented 10.46 % (34 applications) of the total number of utility model applications in the Slovak Republic in 2019.

We can, therefore, state that the transport sector produces the highest number of inventions, technical solutions and innovations, which must be properly protected by their inventors and must also choose the right form of commercialization of the created intellectual property. In the given sector, the most common forms of intellectual property protection in the Slovak Republic are the transfer of rights or granting a license.

[2] If the license agreement is not concluded in writing, each party has the right to request the other party in writing to issue a written confirmation of the license agreement, which must contain a specification of the work that is the subject of the license and specific conditions under § 19 par. 1 and 4 and § 66 to 69 and § 72 agreed by the parties. If the right under the first sentence is not exercised within 15 days of the conclusion of the license agreement, the right to issue this confirmation expires. If the other contracting party does not issue the confirmation according to the first sentence within 15 days from the delivery of the request for the issuance of the confirmation, the contract was not concluded. The collective license agreement must be in writing.

[3] An important difference between granting an exclusive license and transferring a right is the protection of the right. In the case of a license, the licensor is always obliged to perform it on the basis of § 514 of the Commercial Code. In the case of a transfer of rights, these rights pass to the acquirer, the transferor ceases to be the owner of the industrial property.

Tab. 2 Patent applications filled in the Slovak Republic in 2019

	Sector	Patent application					MPT
		Home	Abroad	PCT	Sum	%	
I.	Electrical engineering						
1	Electrical machinery and apparatus	22	0	1	23	9.83	F21; G05F; H01B,C,F,G,H,J,K,M,R,T; H02; H05B,C,F,K
2	Audio-visual technologies	2	0	0	2	0.85	G09F,G; G11B; H03F,G,J; H04N-003,-005,-009,-013,-015,-017,-019,-021,R,S
3	Telecommunication	9	0	0	9	3.85	G08C; H01P,Q; H03B,C,D,H,K,L,M; H04B,H,J,K,L,M,N-001,-007,-011,Q,W
4	Information technologies	12	0	0	12	5.13	G06; G11C; G10L; G16Z
5	Semiconductors	2	0	0	2	0.85	H01L; B81
II.	Instruments						
6	Optics	8	0	0	8	3.42	G02; G03B,C,D,F,G,H; H01S
7	Analytical, measuring, control technologies	29	0	0	29	12.39	G01B,C,D,F,G,H,J,K,L,M,N,P,Q,R,S,V,W; G04; G05B,D; G07; G08B,D; G07; G08B,G; G09B,C,D; G12
8	Medical technology	2	0	0	2	0.85	A61B, C,D,F,G,H,J,L,M,N
9	Nuclear engineering	4	0	0	4	1.71	G01T; G21; H05G,H
III.	Chemistry, medicines						
10	Organic fine chemistry	3	0	1	4	1.71	C07C,D,F,H,J,K
11	Macromolecular chemistry, polymers	2	1	0	3	1.28	C08B,F,G,H,K,L; C09D,J
12	Medicines, cosmetics	2	1	0	3	1.28	A61K, A61P, A61Q
13	Biotechnology	2	0	0	2	0.85	C07G; C12M,N,P,Q,R,S
14	Agriculture, food chemistry	4	1	0	5	2.14	A01H; A21D; A23B;,C,D,F,G,J,K,L; C12C,F,G,H,J; C13D,F,J,K
15	Chemical and oil industry	4	1	0	5	2.14	A01N; C05; C07B; C08C; C09B,C,F,G,H,K; C10B,C,F,G,H,J,K,L,M,N; C11B,C,D
16	Surface technology, surface treatment	0	0	0	0	0	B05C,D; B32; C23; C25; C30
17	Materials, metallurgy	5	12	1	18	7.69	C01; C03C; C04; C21; C22; B22,B82
IV.	Process engineering, special equipment						
18	Chemical engineering	5	1	0	6	2.56	B01B,D (without -046 to -053),F,J,L;B02C; B03; B04; B05B; B06; B07; B08; F25J; F26
19	Processing of materials, textiles, paper	7	1	0	8	3.42	D05; D06B; C,G,H,J,L,M,P,Q; D21
20	Handling, printing	7	1	0	8	3.42	B25J; B41;B65B, C,D,F,G,H; B66; B67; B33Y
21	Agricultural and food processing	3	0	0	3	1.28	A01B,C,D,F,G,J,K,L,M; A21B,C; A22; A23M,P; B02B; C12L; C13C;,G,H
22	Environmental technology	3	3	0	6	2.56	A62D; B01D-046 to -053; B09; C02; F01N; F23G,J
V.	Mechanical engineering, machines						
23	Machine tools	10	0	0	10	4.27	B21; B23; B24; B26D,F; B27; B30
24	Engines, pumps, turbines	12	0	0	12	5.13	F01B;,C,D,K,L,M,P; F02; F03; F04; F23R
25	Heat processes and devices	7	1	0	8	3.42	F22; F23B,C,D,H,K,L,M,N,Q; F24; F25B,C; F27; F28
26	Mechanical elements	5	0	1	6	2.56	F15; F16; F17; G05G
27	Transport	15	1	0	16	6.84	B60; B61; B62; B63B,C,H,J; B64B,C,D,F
28	Space technology, weapons	1	0	0	1	0.43	B63G; B64G; C06; F41; F42
VI.	Consumption						
29	Consumer goods and equipment	9	0	1	10	4.27	A24; A41B,C,D,F,G; A42; A43B, C; A44; A45; A46B; A47; A62B,C; A63; A99Z; B25B,C,D,F,G,H; B26B; B4; B43; B44; B68; D04D; D06F,N; D07; F25D; G10B,C,D,F,G,H,K

30	**Civil engineering, construction, mining**	**9**	**0**	**0**	**9**	**3.85**	**E01; E02; E03; E04; E05; E06; E21**
	SUM	**205**	**24**	**5**	**234**	**100**	

Source: Own processing according to the Industrial Property Office of the Slovak Republic

4 CONCLUSION

Intellectual property is characterized by its uniqueness and originality, so it is not possible to enclose it and bind it in a clear, precise and predetermined way of protection and commercialization into practice. Each research result needs to be approached individually, examined in detail and, in cooperation with its authors, co-authors and partners from practice, choose a suitable form of protection and commercialization.

Licensing is one of the forms of commercialization of industrial property is a traditional, but nevertheless a relatively complicated form of technology transfer in the field of Intelligent Transport Systems, in which there is a wide intertwining relationship between the licensor and the licensee or third parties whose rights may be affected by the exercise of the license. There is also an overlap between copyright and industrial property rights within a single technology, which has a significant impact on the commercialization strategyauto and the content of the license agreement. The complexity of licensing relationships is often unpredictable in the early stages of new inventions or other innovative industrial property items, as it usually depends on the specifics of these items, which only become apparent during their use.

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