Forms of commercialization of research and development results at universities in the Slovak Republic

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Abstract— The successful transfer of technology from academia to practice and the subsequent commercialization of research and development results are important for the application of academic research and development results. In the context of the increased attention to the protection of intellectual property in the university environment, the importance of choosing the appropriate form of its commercialization is also increasing. The presented article describes individual forms of commercialization of intellectual property of the university environment used in the Slovak Republic.

Index Terms— Commercialization, technology transfer, intellectual property, university environment, licensing, spin-off, contract research.

1 Introduction

The term "technology transfer" can be understood as the transfer of research and development results into practice, but does not necessarily have a commercial character. It may be the publication of results (scientific article, book, lecture, poster, abstract in conference proceedings, etc.). Provision of services and consultations and customer research (contract research) can also be considered as forms of technology transfer.[1]

Commercialization is a process leading to a financial evaluation of the research and development results. In the case of a decision on commercialization, intellectual property needs to be treated as an asset, regardless of its nature, it should be valued and recorded in the accounts of the workplace and then commenced commercialization.

Commercialization of research and development results is thus the selection of suitable ideas, research and development results, their implementation into practice or simply the transfer of research and development results into business practice in the following two ways:

- Direct cooperation (provision of services, contract research – customer research, sale of research monographs in bookshops, research studies and collective research projects, etc.);
- Structural technology transfer (sale of patents, licencing, establishment of spin-off[2] and start-up[3] companies, etc.).

2 Contract research

Contract research is the most common form of commercialization of research and development results in a university environment. The contract research may be a collective research and customer research.

The type of contractual research has a major impact on revenues sharing, as in the collective research, the counterparties (such as the university and the private enterprise) combine their personnel, financial and material resources to carry out the research task. At the same time, this means that the parties apply the rights to the objects of intellectual property either together or in accordance with the conditions determined in the contract research agreement. In the same way, they share their net income.

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[1] http://nptt.cvtisr.sk/buxus/docs/Dusevne_vlastnictvo_a_transfer_technologii_1.pdf

[2] Spin-off - is an organizational unit, a trading company that was created by separating a certain activity or a group of people from a primary organization (university) in order to commercialize research and development results. Intellectual property is provided to the company by a license agreement or by the transfer of rights, but the university may (but do not have to) acquire a spin-off property share. Typically, the originator of the intellectual property is involved in the activities of the company.

[3] Start-up - this term refers to organizations that are in the process of being set up to implement a new product/service. Examples of start-ups are new technology-based trading companies whose main activity is the development, marketing or use of technology. The start-up may be with the university's participation, or without it. UNIZA has not established a start-up with the university property share, yet.

The collective research, in the context of the University of Zilina (UNIZA) internal directive on intellectual property management, is the type of contractual research where:

• the parties shall combine their personnel, financial and material resources to carry out the research task,

• all parties are involved in the implementation of the research and either apply their rights jointly or grant free licenses to use the created objects of intellectual property;

• the contract research agreement is the legal basis for the implementation of collective research.

According to the internal directive of the University of Zilina, customer research is understood to be the type of contract research where:

• one party orders the creation of research results or realization of a research task from the co-partner,

• the contracting parties are the customer and the contractor,

• the customer usually fully finances the realization of the contract research and is interested in obtaining the majority of rights of the research results related to its usage,

• the legal basis for the realization of the contract research is a contract for work in the sense of the Copyright Act for software solutions and databases or the unnamed cooperation agreement under the Commercial Code for research activities resulting in know-how.

In this case, the university is paid for development, but usually it does not gain other shares of the application of the research results, its sale or licensing to third parties.

University employees should consult the signing of research agreements with the Center for technology transfer (CTT) or the University Legal Department to ensure the legal and economic issues of the research. For example, to enable research results to be presented in the educational process or to be used for further research and development, and at the same time that the reward is adequate to their practical contribution.

3 Transfer of rights of research and development results

In some cases, licensing is not appropriate or sufficient for successful technology transfer. In such cases, it may be possible to transfer the right[4] to another natural or legal person instead of consenting to the use of the intellectual property. The transfer itself is determined by the principle that no one can transfer more rights to another than they have.

In the process of commercialization of the results of research and development by sales, the university needs to consider the impact of this commercialization form. In the process of the sale, the university loses the property rights to the given solution and obtains, usually, one time reward. To determine the selling price, it should contact a court expert on Industrial Property.

Therefore, it is recommended that the institution itself does not initiate the transfer of rights and rather seeks to transfer the subject of intellectual property by licensing. However, in some cases, the transfer of rights is the only reasonable solution for the successful transfer of technology. On the other hand, the licensing agreement provides much more space for contracting (in particular in connection with contract research or expert consultations).

In the transfer of rights, the transfer agreement must identify the subject of the transfer clearly and unmistakably and, in the case of the transfer of rights to the registered subject of the intellectual property, the registration number and/or application number must always be stated. If the application has not been filled, the subject of the transfer must be sufficiently defined by the description, drawing and other contract annexes.

In the case of a partial transfer, the scope of the transferred rights care must be clearly defined. If a third party lien is established on the subject of the transfer (a backup creditor, usually a bank), it is necessary to secure written consent of the lien creditor with the transfer prior to the conclusion of the transfer agreement, unless otherwise stipulated by the security agreement.

The university should, for example through the CTT, monitor the fulfilment of the contractual terms and conditions agreed in the contract of transfer of rights to the subjects of the intellectual property of the university or the university research and development. In particular, it is necessary to control:

(a) the correctness and completeness of the transfer;

(b) payment of the acquirer;

(c) the record of the transfer in the relevant register in the case of intellectual property registration;

(d) the execution of subsidiary arrangements of the transfer of rights.

If a university submits an application for registration of intellectual property and later, for example, based on CTT recommendation, it concludes that this procedure is unsatisfactory, it may transfer from the application to the third party. It is not necessary to wait for the end of the registration process of the intellectual property in question, but it may also make the transfer of rights earlier.

[4] The transfer of the right is the proprietary right of the proprietor of the patent, utility model, design, topography, new strain, trademark as well as the producer of the phonogram, audio-video recorder, broadcaster and database maker. The use of this right results in a change in the owner or other holder of the intellectual property rights.

The transfer of rights is effected by a contract on the transfer of rights which is concluded as an unlimited contract under the Commercial Code or the Civil Code. The contracting parties are limited by certain conditions of the contract, which are stipulated in the legislation regulating individual areas of industrial property rights. e.g. patents are § 12 of the Patent Act. It requires the written form of such a contract to be valid; non-compliance with this form results in the contract being void. In the case of items of protection according to the Copyright Act, the written form of the contract is not required but recommended. However, it is mandatory to grant an exclusive license. The last amendment clarifies the contractual relations.

4 Establishment of Spin-offs

It is one of the variants of a trading company established for the purpose of using and developing the intellectual property of universities up to the form of a product or service applicable on the market. The originators of intellectual property are usually involved in the business. A spin-off company can be established in two ways, without the parent institution's capital participation or with the parent institution's capital participation.

When establishing a spin-off, we consider the following three forms of intellectual property provision, or research and development results to be commercialized: transfer of rights to spin-off rights by sales, a deposit of intellectual property to spin-off assets (in particular non-cash contribution to the spin-off core capital), exclusive or non-exclusive license[5].

The issue of commercialization of the results of research and development into practice in the form of a spin-off business is complex and assumes a large number of variants of the parent institution involvement and ways of sharing and providing research results. The university must provide feedback on the use of its research, the payment of fees, the further development of research and the observance of ethical standards when doing business. The possibility of a high financial assessment of research and development results by this form of commercialization is counterbalanced by the risk associated with the possible failure of the spin-off business.

5 Establishment of Start-Up

It is a form of intellectual property commercialization intended especially for students and PhD students. Examples of start-ups are new, technology-based enterprises whose main activities are the development, marketing or use of technology. The potential success of this type of business does not lie in its novelty, or in the benefits, which are to be gained from the use of technical innovations. The start-up is often financed by venture capital.

In the university environment, the commercialization of innovative ideas is a start-up business linked to the activity of university incubators. Incubators are established by universities according to §39 of Act No. 131/2002 Coll. on Higher Education[6].

From the perspective of the university business, it would be appropriate, if the commercialization of innovative ideas and intellectual property would be tied to the university in the form of, for example, a property share in the start-up business. Intellectual property created by students or doctoral students is subject to a student work regime, in accordance with applicable legislation. It follows that the university has no right to resolution unless otherwise agreed with the student/doctoral student.

6 Licensing

Licensing as one of the forms of commercialization of industrial property is a traditional, but rather complicated, form of technology transfer, which involves a wide range of interrelationships between the provider and the licensee or third parties whose rights may be affected by the license. The complexity of licensing relationships is often unpredictable in the early stages of new inventions or other innovative industrial property objects since it usually depends on the specificities of those objects that arise only during their usage.

We distinguish a license agreement under the provisions of the Commercial Code[7], where the basic provisions are regulated by § 508 of the Commercial Code[8] and the license agreement under the provisions of the Copyright Act[9], where the basic provisions are regulated by § 65 of the Copyright Act[10].

The license agreement[11] is clearly the most widely used contract type in the field of intellectual property rights management. By license agreement, the right holder exclusively grants permission to use the intellectual property subject to which he

[5] Internal materials of the project University Science Park of the University of Žilina (ITMS: 26220220184): Proposal for a Directive on the Management of Intellectual Property in the Conditions of the University of Žilina. 2014.

[6] According to Act No. 131/2002 Coll. on Higher education and on change and amendemtns to other laws, the incubator is: "The public higher education incubator is a specialized workplace aimed at supporting the establishment and development of small enterprises that use the results of research and development, patents, utility models and design for their innovative products, goods research and development. A public higher education incubator usually provides support to small businesses within a maximum of three years from obtaining their business. The focus of support is to provide appropriate start-up conditions for the business, in particular by providing expert advice, providing administrative and other services, office and other infrastructure and business premises. A public university incubator can use a special method of setting up and developing a firm based on the earmarking, where a new economic activity is being developed within the public higher education institution, directly exploiting the results of research and development, and then separated from the public higher education institution. The incubator can implement a method of setting up and developing companies in a way of earmarking when entrepreneurial activities develop independently and the public higher education institution may or may not be a founder or partner in that legal entity.

[7] Act No. 513/1991 Coll. Commercial Code as amended.

[8] (1) An industrial property license agreement entitles the acquirer to exercise industrial property rights in the agreed extent and in the agreed territory (hereinafter "the right") and the acquirer undertakes to provide some reward or other asset.

(2) The contract requires written form.

[9] Act No. 185/2015 Coll. on Copyright and related Rights as amended.

[10] (1) By the license agreement, the author grants the transferee consent to use the work (hereinafter referred to as the "license"). In particular, the license agreement contains the method of use of the work pursuant to § 19 par. 4, the scope of the license, the time for which the author grants the license, or the method of its designation and reward or method of its determination, if the author and the acquirer have not agreed to grant a license free of charge.

(2) The content of the license agreement or its part thereof may also be determined by reference to the terms and conditions known to the parties or available to them at the time when the license agreement is concluded.

(3) The license agreement must be in written form if the author grants an exclusive license.

(4) If the license agreement is not concluded in written forms, each of the parties to the contract has the right to ask the other party in writing to issue a written confirmation of the conclusion of the license agreement, which must include the specification of the work that is the subject of the license, according to §19, par. 1 and 4, and §66 to 69 and §72 agreed by the parties. If the right determined intthe first sentence does not apply within 15 days from the conclusion of the license agreement, the entitlement to issue this certificate expires. If the other party does not issue a claim, under the first sentence, within 15 days of receiving the request for a certificate, it shall be deemed that no contract was concluded.

[11] A license agreement may be defined as a two- or multi-party agreement between a rightholder as a licensor and a user as a licensee, the subject of which is the consent to use the intellectual property object (exercise of intellectual property rights) and the mutual rights and obligations of the parties.

exercises the rights. From the point of view of the institution, it can be the institution itself (as an inferred right holder[12]), or its staff and students as originators or other original right holders[13]. If the institution does not grant a license but acquires it, then the other party (for example, a trading company) is the holder of the right.

Despite the difficulties arising from the contractual relationships and the 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 ways of transferring industrial property from the university environment. Despite the indisputable advantages of licensing, this form of intellectual property commercialization is rarely used in Slovak university environment. Exceptions are software licenses, which are mainly protected by licensing. From the point of view of industrial rights, patents are most often licensed, the patent proprietor grants the rights to use their invention to the licensee. An exclusive and widely conceived license agreement (for the use in an unlimited scope, throughout the period of protection, with the possibility of granting a license and assigning a license) has, in fact, similar effects to the transfer of rights.

7 Conclusion

Choosing a method of commercialization is one of the key steps in the technology transfer process. Each of these ways of commercialization has its advantages and disadvantages, and the level of risk it entails is different. In the process of commercializing of the subject of intellectual property, it is desirable to establish a cooperation with a commercial partner who possesses the appropriate market knowledge and means to bring the intellectual property to the market in the required quality and scope. The requirements for potential partners depend largely on the choice of a particular form of commercialization.

Commercialization of the results of research and development, i.e. of intellectual property, brings revenues that should be shared between the universities, faculties, or other sections of the university, departments and researchers (employees) who have been involved in creating a commercialized solution. The distribution of revenues from commercialization should take place only after the costs associated with the creation of the solution have been paid or in accordance with the internal regulations of the university and the applicable legislation of the Slovak Republic. The costs are calculated by the originators/authors in collaboration with the Technology Transfer Centre, taking into account material and labour costs accepting the scope and content of the originator's/author's work tasks and the costs of ensuring the protection of research results. When determining the amount of costs, their source is taken into account. When dividing the revenues from commercialization, it would be appropriate to take into account the cooperation of the university and other entities in the development of a commercialized solution and the agreed contractual terms of the cooperation.

[12] The inferred entity is the legal or natural person who derives its rights from the original rightholder. In the field of culture, it is mainly the employer, the heir, the producer or the collecting society in the case of an audiovisual work. In the area of industrial rights, the inferred rightholder is mainly an employer (e.g. an institution) or other rights holder (patent holder, design owner, etc.) if the originator or the original owner transferred their right to that person.

[13] The original subject is the individual who created the intellectual property object by their own creative intellectual activity.

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