



## BalkanMed E-Business Pages

# Technology Transfer Guide - North Macedonia

GAUSS Institute - Foundation for New Technologies, Innovations and Knowledge Transfer – Bitola, North Macedonia



# **Guide for Implementation of Technology Transfer in the Republic of North Macedonia**

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## **Preface**

The primary objective of this paper is to depict the actual conditions in the Republic of North Macedonia referring to the national innovation system, technology transfer processes, supporting institutions, legal system etc. It is intended as a guide for the readers. The essence of the technology transfer process is elaborated analyzing the most important aspects. Next, the different types of technology transfer and the benefits and risks from the technology transfer are explained. An interpretation of the normative requirements for the organization of technology transfer in the Republic of North Macedonia has been made and additionally, the most relevant laws are listed. Particular emphasis is placed on the procedures for recognition of intellectual property rights in the Republic of North Macedonia and the most relevant technology transfer centres and other institutions supporting technology transfer in the Republic of North Macedonia.

## 1. The essence of technology transfer

### 1.1. What is technology

Nowadays it is not a rare situation to hear the term technology. Every day, a lot of people around us are talking about technology in many contexts. We are in touch with technology at our homes, at work, even when having a conversation with the bartender while having a drink at the local café.

Technology as such has attracted great attention among many authors, companies, associations, international organizations etc. In order to better understand the essence of the term technology, here we will analyze several definitions given by different authors.

According to Encyclopedia Britannica, technology is the application of scientific knowledge to the practical aims of human life or, as it is sometimes phrased, to the change and manipulation of the human environment.

According to Kumar Et al. (1999) technology consists of two primary components: 1) a physical component which comprises of items such as products, tooling, equipment, blueprints, techniques, and processes; and 2) the informational component which consists of know-how in management, marketing, production,

According to Lan and Young (1996), Technology is always connected with obtaining a certain result, resolving certain problems, completing certain tasks using particular skills, employing knowledge and exploiting assets.

### 1.2. Technology lifecycle

Analyzing the aforementioned definitions, we can conclude that as long as the term 'technology' is based on knowledge, skills, equipment, techniques, processes etc., it has a lifecycle consisted of several phases. This is due to the fact that it all get outdated as time passes, so they need to be improved somehow.

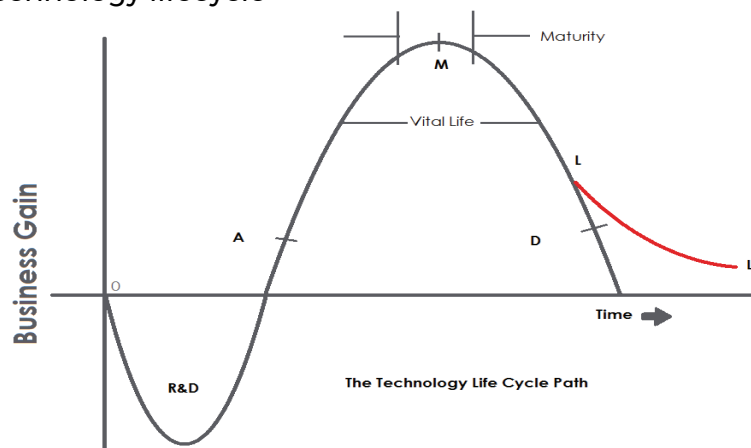
The technology has been developed in Research & Development processes carried out by the companies, organizations, governments etc. This process is often very expensive and it takes a long time. Technological advancement is not always achieved only by improving current technology, but sometimes it is also achieved through the development of completely new technology. Researchers have realized that often there are so-called gaps between current and potential new technology, and that is what makes developing new technology so difficult. Sometimes there are very big gaps and it makes it very hard for the researchers to see the potential benefits of developing new technology. This problem exists almost in every industry. There are several obstacles that may stand in the way of developing and adopting new technology and discarding the outdated one:

- Incorrect point of view of technical limits
- Lack of ability to evaluate technological progress
- Wrong interpretation of market signals
- Wrong interpretation of customer needs

- Too big gap between outdated and potential new technology
- Culture

Once the new technology is developed it can be used to improve some aspects of managing and organizing the company's activities. It can make the production process cheaper or faster, it can improve the sale processes, it can improve the inner structure of the organizations etc. During first, ascending period after its developing, the use of the new technology usually slowly rises and systematically takes the place of the outdated technology.

Figure 1.2.1 Technology lifecycle



Source: <https://www.greyb.com/technology-shifts-can-give-first-mover-advantage/technology-shift-technology-life-cycle/>

As illustrated in figure 1.2.1, the S-curve, that represents the technology life path, shows us that its growth is not indefinite and the development reaches a ceiling at some point. It happens in the mature phase of technology lifecycle, and after that point, it starts to slightly fall indicating the need for new technology.

For efficient managing of the organization, it is essential to know when to start researching for new technology. At this point, we can agree that we must see through an economic prism and conclude that the main determining factor is cost-effectiveness of the whole process. In that context, it is not considered economically sound to think about introducing new technology in the organization while the current technology that is being used is in the ascending phase or in the maturity phase of its lifecycle.

The moment when the current technology entry the descending phase, it indicates the start of the activities to replace it with something new and more efficient. The organization must be aware of the need to engage a new technology when it's time for that, in order to keep up with the competition.

### 1.3. Need for technology change

An organization should not consider the technology it employs as something permanent. On the contrary, it should see it as an expandable tool needed to successfully execute the organization's main tasks, run the business and achieve the main goals. In this context, if an organization's needs change, it should change the

tool in order to satisfy those needs. The needs for technology change in the organization can arise from several factors. In this guide below we will emphasize some of them.

Often, scientific researches end up with some inventions and that is creating new ways to solve the organizations' problems.

This process is highly dependent on the technology that competition has in use and on the market's specific needs. So if the competitors' technology is outdated, that keep the organization in its comfort zone, but if the competitors' technology is better than the one organization have, it will increase the pressure to an organization and if it doesn't shift to newer technology it is probably to start losing the customers on the market. Undoubtedly, technology can give a competitive advantage to an organization and provide it a better position on the market.

Legislation can also force organizations to shift to new technology. New legal restrictions may prohibit the use of some outdated technology and that will make the organizations to replace it with a new one in order to keep or even improve their position on the market.

## **1.4. Technology transfer**

After recognizing a need, an organization should start searching for relevant technology that will be economically affordable for it and will best satisfy the need. Two main strategies are used by the organizations in practice in order to solve this problem. According to the first one, the organization is developing the technology itself and according to the second one, the organization is looking for the technology outside it. The concept of technology transfer more relies on the second case when the organization is looking for a new technology outside it.

As a process of transferring skills, knowledge, technologies, methods of manufacturing and facilities among organizations, the transfer of technology is instrumental for boosting the economy through the creation of competitive products, new jobs and a better quality of life (Nattacia D. Et al, 2013).

According to Saint Mary's University, Canada, Technology transfer is the process of transferring scientific findings from one organization to another for the purpose of further development and commercialization. The process typically includes: identifying new technologies, protecting technologies through patents and copyrights, forming development and commercialization strategies such as marketing and licensing to existing private sector companies or creating new start-up companies based on the technology.

According to the World Intellectual Property Organization, the formal process of technology transfer is described as the transfer of new technologies from universities and research institutions to parties capable of commercialization.

Taking into consideration the aforementioned, we can conclude that in general, the process of technology transfer consists of exchange or a move of technology from one organization, enterprise or country to another. It takes advantage of opportunities to introduce newly developed and already available technologies, suitably adapted to the local market/conditions. The process can also include a transfer of skills, knowledge, manufacturing methods and facilities (Nattacia D. Et al, 2013).



Technology can be transferred from donor to receiver either through direct co-operation between them or with a mediator (such as technology broker, agencies etc.)

Main goals of the technology transfer process are:

- To give value to the results from R&D activities and to the intellectual assets;
- To make the developed technology accessible to a wider range of users;
- Development and exploitation (including commercial) into new products, services & applications;
- To increase competitiveness;

The main ways to achieve these goals are either from academic community (as technology donor) to industry (as technology receiver) or among different industrial sectors.

In practice, technology can be transferred between two or more countries or between unions of countries, but we can conclude that most of the technology transfers happen between companies as they are constantly motivated to improve their market positions, maximize their profits, minimize their costs etc. In order to satisfy their needs, the companies are all the time looking for better technology to implement.

Universities and other educational institutions also play a big role in transferring technology. Undoubtedly a lot of innovations are developed during R&D activities in the universities. According to that, these institutions are one of the main sources of new technology and companies very often transfer technology that was developed here.

The process of technology transfer can be initiated by two factors. First, it can be considered as pushing force originated from new technology developed. This is a case when a new technology has been developed before the organization really feel the need for it. This is usually a spin-off from another research activity, and very often the technology was not intended to get developed. Simplified, this is a case when the new technology is developed before the need is recognized.

The second case can be considered as pulling force originated from technology demand i.e. identified need for new technology. In this case, the organization needs to decide if it is going to develop the new technology exclusively to satisfy the specific need, or it is going to transfer and adapt an existing technology from another organization in order to satisfy the specific need.

In the first case, the organization would decide to transfer technology as a result of their perception that it can be usefully applied and it can improve its market position. In the second case, the organization would transfer technology as a solution to its problem.

## **1.5. Conditions in the Republic of North Macedonia**

Talking about technology the transfer process and how frequent it is in the Republic of North Macedonia, we cannot conclude that this country has a perfect environment for that. After the breakup of Yugoslavia, it has started a very difficult period for the Republic of North Macedonia. The country got into transition and was hit by the privatization process. The national economy was literally on its knees as a

result of the chaotic political situation and dysfunctional legal system, but those are not a subject of this guide.

The stagnating economy in that period, logically cannot be characterized by a high level of technology transfer. There are a lot of reasons for the low level of technology transfer. We can freely list the following as most important:

- Outdated educational system
- Lack of finance in the companies
- The small number of innovation-oriented companies
- Undeveloped entrepreneurial spirit
- Small competition

The research and development activities in the universities (all of them national then) were not very productive and didn't produce a lot of innovations. Most of the companies lost their confidence in the educational system and were not looking for technology there.

Most of the companies' financial situation was very difficult and they couldn't afford to transfer expensive technology (usually from foreign countries), so they were trying to keep the old technology as long as it is possible.

In addition, the companies' managing policies were not innovation-oriented because of the conservative managers who didn't have an entrepreneurial spirit.

Small competition has additionally reduced the pressure to the companies and decreased their needs to shift to newer technology and improve their functioning.

Nowadays the picture is slightly different. Concerning education, private educational institutions have been established in the country and increased the competition in the educational system. Meanwhile, national universities have started implementing some practices learned from developed countries.

Increased domestic and foreign competition has made the companies invest in newer technology in order to increase their competitiveness and to fight for life and a better market position.

Young managers are coming on the top of the companies' hierarchy, and they faster accept and use the innovation-oriented concepts of managing. Entrepreneurial spirit can be also noticed.

Simplified, the companies have understood that investing in newer technology is inevitable if they want to prosper in the ruthless environment.

## 2. Types of technology transfer, benefits, and risks

### 2.1. Types of technology transfer

As long as the problematics of technology transfer is being analyzed and elaborated by many authors, it is inevitable to find various views in the literature. In that context, we can find that different authors have broken up the technology transfer into different types, depending on their point of view.

Edwin Mansfield makes a useful distinction between **vertical** technology transfer and **horizontal** technology transfer: "Vertical technology transfer occurs when information is transmitted from basic research to applied research, from applied research to development, and from development to production. Such transfers occur in both directions, and the form of the information changes as it moves along this

dimension. Horizontal transfer of technology occurs when technology used in one place, organization, or context is transferred and used in another place, organization, or context "(Mansfield E., 1982).

According to Das, technology transfer can be of two types: 1) production of a new product (product or embodied technology transfer); and 2) more efficient production of existing products (process or disembodied technology transfer) (Das S., 1987).

If we take a look at the technology transfer process from a different aspect, we can tell that it can be "intramural" or "extramural". When we are talking about intramural technology, we really mean intra-company transfer which is the transfer between different functions within a company or institution. On the other side, extramural technology transfer is actually inter-company technology transfer and we can define it as the transfer between a company or institution and the rest of the world.

When taking a look at the technology transfer process from a macro aspect, we can make a distinction between international technology transfer, regional technology transfer, and cross-industry technology transfer.

The **international technology transfer** refers to the transfer across national boundaries. Very often it is a transfer of technology from industrialized countries to developing countries.

**Regional technology transfer** refers to the transfer among the regions of the countries. E.g. transferring of technology between Bavaria and Hessen in Germany.

**Cross-industry technology transfer** refers to the transfer among the industrial sectors in an economy. E.g. transferring of technology from the IT industry to the banking industry.

## 2.2. Models of technology transfer

### 2.2.1. The appropriability model

According to this model, which was developed in the late '40s from the 19<sup>th</sup> century, good or quality technologies will sell themselves by default. Obviously, this model emphasizes the importance of quality and it assumes that after the researchers develop the technology and make technologies available through various forms of communications such as technical reports and professional journals, the users will "automatically show up at the researcher's door" (Devine et al., 1987).

The fundamental presumption of the appropriability model is "viewing technology transfer as the result of an automatic process that began with scientific research and then moved to development, financing, manufacturing, and marketing. [One] need not necessarily be concerned with linkages in the technology commercialization process" (Kozmetsky, 1990).

However, previous studies have acknowledged that over the years evidence has shown that quality technologies do not usually sell well themselves (Devine et al., 1987).

### **2.2.2. The dissemination model**

According to this model, which was developed in the '60s from the 19<sup>th</sup> century, it is essential for the innovation and technology to be disseminated or spread out to the potential users by the experts.

The fundamental presumption of this model is that once the linkages are established, the new technology will move from the expert to the non-expert “like water through a pipe once the channel is opened” (Gibson and Slimor, 1991).

Based on this model, the expert’s primary responsibility is to select technology and ensure the technology is available to a receptor that can understand and potentially use the technology (Gibson and Slimor, 1991). However, this model suffers from its one-way communication (unilateral) characteristic with no involvement from the users (Gibson and Slimor, 1991).

### **2.2.3. The Knowledge utilization model**

According to this model, which was developed in the late '80s from the 19<sup>th</sup> century, the accent has been put on two things. First, it emphasizes that the interpersonal communication between researchers (technology developers), and technology users is very important. Second, it emphasizes that facilitators of technology transfer or organizational barriers are also very important.

The fundamental presumption of this model is that technology moves “hand-to-hand” to one direction, unilaterally from the experts to the users, to become a developed idea and eventually a product (Gibson and Slimor, 1991).

The appropriability, dissemination, and knowledge utilization models still suffer from inherent linear bias where these TT models have limitations in terms of their limited application in transferring technology across organizational boundaries (Gibson and Slimor, 1991).

### **2.2.4. The communication model**

Communication model comes later than the previous three, and it is considered as their replacement by several researchers. According to this model, technology transfer is “a communication and information flow process with communication understood to be concerned with full exchange and sharing of meanings” (Sazali and Haslinda, 2011). It is “an on-going process which involves a two-way interactive process (non-linear) by continuously and simultaneously exchanging ideas among the individuals involved” (Williams and Gibson, 1990).

According to several researchers, feedbacks in this model are very important and help the participants in the technology transfer process to reach convergence about the important aspects of the technology.

The fundamental presumption of this model is that “the implementer (technology developer) is responsible for transferring knowledge correctly through the appropriate channels for the user to understand, and failure to adopt knowledge is simply because the users fail to understand” (Tenkasi and Mohrman, 1995). According to Tenkasi and Mohrman, “this model is unable to provide explanations on 1) the complexities of TT in the context of knowledge transferred through collaborative learning, 2) the subjectivity of knowledge, and 3) the need for contextual adap-

tation, dialoguing at the level of values, assumption, and beliefs that takes on more acute proportions with soft or disembodied technologies” (Tenkasi and Mohrman, 1995).

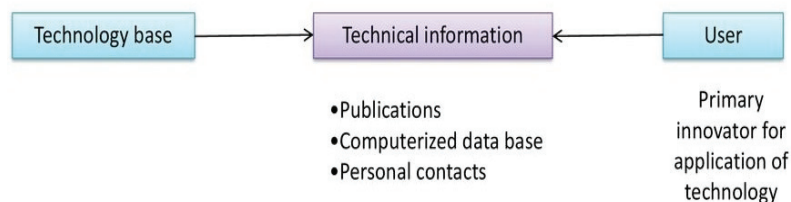
### 2.3. Modes of technology transfer

In practice we can make a distinction between three different modes of technology transfer i.e. different ways of transferring the technology:

- Passive mode;
- Semi-active mode;
- Active mode.

We can conclude that it passive technology transfer process if there is no direct communication or assistance between the technology developer and final user of the technology. In this case, the final users collect technology information from the third party. In this mode, only the knowledge part of technology is transferred.

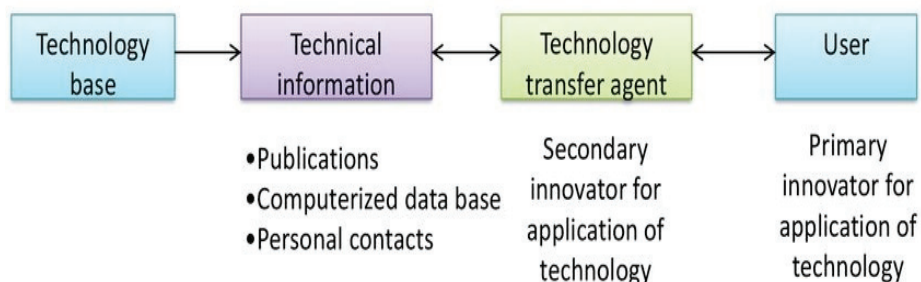
Figure 2.3.1. The passive mode of technology transfer



Source: <https://slideplayer.com/slide/14659345/>

“In the semi-active mode, there is intervention from a third party in the transfer process. This is usually in the form of a transfer agent. In the semi-active mode, the role of the transfer agent is limited to that of adviser. Very often in the semi-active mode, the transfer agent only screens information in the relevant field of interest and passes it on to the final user. He, therefore, ensures the relevance of the information, because of his knowledge, not only about the user's needs but also because of his knowledge about the technology.

Figure 2.3.2. The semi-active mode of technology transfer



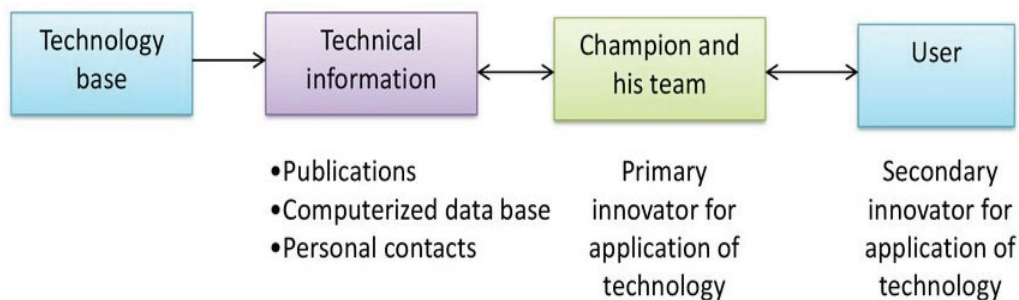
Source: <https://slideplayer.com/slide/14659345/>

The role of the transfer agent is, therefore, one of communicator between the technology and the user. If his role is beyond this, then the mode of transfer becomes active.” (Grange and Buys).

“In the active mode not only knowledge is transferred, but also the process is carried through to an actual demonstration of the technology. In this mode of transfer not only words and pictures are transferred, but a working system is installed and demonstrated to the users thereof. The user is trained to use the technology. It is clear that the technology transfer agent plays a key role in this transfer mode. The agent does not only identify relevant technologies but also helps in identifying the most appropriate technology” (Grange and Buys).

“Organizations who have problems implementing technical solutions themselves, and who are struggling to bridge the gap between technology and the ultimate application thereof benefit most from the active mode of technology transfer is most likely to be found. Organizations like small businesses that do not have their own R&D departments have to consult a third party on introducing new technology to satisfy their needs” (Grange and Buys).

Figure 2.3.2. The active mode of technology transfer



Source: <https://slideplayer.com/slide/14659345/>

## 2.4. Channels of technology flow

The developed technology by the researcher can flow through different channels until it gets to the final users. For the purpose of this guide we are going to take a look at the most important ones:

### 1. **Public dissemination**

The public dissemination channel of technology flow has several important characteristics:

- The technology transfer can be done unintentionally, and it can proceed without continued involvement by the researcher (technology developer);
- Information is diffused to the public domain by various tools with limited restrictions or without any restrictions on its use;
- Information can be exploited by potential users, and it can be applied to their purposes;

As channels of this type of technology transfer, we can list the following: publications, education, conferences, training, study missions and exchange of visits.

## **2. Reverse-engineering**

The most important characteristics of the reverse-engineering channel of technology flow are:

- There is no active contribution in the process from the researcher (technology developer);
- The potential user is capable of breaking the code of technology and to duplicate it in some way without legal violation of property rights. E.g. A company can purchase a competitor's new product, duplicate it in some way (reverse-engineering) and launch it on the market as its own product;

## **3. Planned channels**

- The technology transfer process is done intentionally, as a planned process, with the consent of the researcher (technology developer);
- The planned channels of technology flow are implementing through several types of agreements. With them, the researcher (i.e. technology developer) gives permission to the users to access and to use the technological know-how:
  - ✓ Licensing
  - ✓ Franchise
  - ✓ Joint venture
  - ✓ Turnkey project
  - ✓ Foreign direct investment (FDI)
  - ✓ Technological consortium & joint R&D

## 2.5. Benefits and risks

When implementing technology transfer process we need to be aware of the risks and benefits that come with it. They can be observed in multiple aspects.

Table 2.5.1. Benefits and risks from technology acquisition

	Risk factors	Benefit factors
Technology Acquisition	<ul style="list-style-type: none"> <li>➤ The ability of the holder of the technology to transfer: it is not enough to stop;</li> <li>➤ Buyer's ability to absorb technology: technical training compatible with the complexity of technology;</li> <li>➤ Implementation of the necessary physical structure: compliance with the rules of Law and the established schedule;</li> <li>➤ Compatibility of the health legislation of the countries involved;</li> <li>➤ The emergence of new technologies or products during the execution of the contract: when not foreseen;</li> <li>➤ Oscillations in product price: international market &amp; dumping;</li> <li>➤ Demand fluctuations - change of the number of products by the buyer (MS);</li> </ul>	<ul style="list-style-type: none"> <li>➤ Increase in institutional technological capacity:               <ul style="list-style-type: none"> <li>✓ human resources;</li> <li>✓ infrastructure;</li> <li>✓ incorporation of a new production platform that can serve as the basis for a range of products.</li> </ul> </li> <li>➤ Incorporation of technology.</li> </ul>
Technology Offer	<ul style="list-style-type: none"> <li>➤ Ability to prospect partners.</li> <li>➤ Ability to identify strengths and weaknesses in technology for greater success in valuation and negotiation.</li> <li>➤ The scope of patent and protection in competitive and strategic markets.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Dissemination of technical knowledge.</li> <li>➤ Quality of Science: publications/respect in the S &amp; T community/researcher support for interaction.</li> <li>➤ Financial return: to feed R &amp; D and motivate inventors.</li> </ul>



Technology Of-fer	<ul style="list-style-type: none"> <li>➤ Empirical stage of the projects: a need for greater financial capacity of the partner for the development &amp; venture.</li> <li>➤ Development cost x remuneration for the transfer.</li> <li>➤ Division of markets (ex-Mercosur).</li> </ul>	<ul style="list-style-type: none"> <li>➤ Effective contribution to reducing economic vulnerability.</li> </ul>
Joint Development	<ul style="list-style-type: none"> <li>➤ Mutual interest in the development and application of the knowledge generated.</li> <li>➤ Effective know-how of developing parties in products with high added technological value.</li> <li>➤ The need for significant investments and the ability to manage the contracts and results obtained.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Exchange of know-how.</li> <li>➤ An increase in the technological capacity of the parties.</li> <li>➤ Optimization of the Parties' technical and financial capacity to measure innovative results.</li> <li>➤ Co-ownership of patents and the possibility of economic gains.</li> </ul>

Source: (Herlandí Et.al, 2017)

### **3. Normative requirements for the organization of technology transfer in the Republic of North Macedonia**

#### **3.1. Contracts for technology transfer**

The most important instrument for the organization of technology transfer in the Republic of North Macedonia is the contract for technology transfer. The managers who tend to implement new technology in their organizations, or the researchers who want to transfer their innovations, must have some knowledge in intellectual property legislation. They all must know that the exclusive right to use the innovation has its developer (researcher), and it only can be used by different person/organization, with authorization from the developer (researcher).

A legal relationship between the transferor (the innovation developer) and the transferee (the user), means that the first one agrees to, and has a will to transfer the innovation (equipment, blueprint, know-how etc.) to the second one who agrees to, and has a will to take and use the innovation, under certain conditions.

In the Republic of North Macedonia, there are three main modalities of commercial technology transfer, although there are some other types (Veljanovska, 2014):

- Complete transmission;
- License agreement;
- Know-how agreement.

If we analyze all the contracts for technology transfer, we can conclude that they are all complex contracts, composed of several other agreements among which

it is mandatory contained one of the aforementioned modalities, and most often it is license agreement or know-how agreement.

### **3.2. North Macedonia national legal Intellectual Property framework**

The most important requirement for technology transfer from the technology developer to an organization is to establish legal ownership of that technology through intellectual property law.

The national intellectual property legal system does not have a very long history. However, the short period since its constitution reveals an extremely intensive process of further development and construction, harmonization with the European and the international legal sources and placing a firm legal basis for existence in the public interest (Manev and Kushti, *National Strategy on Industrial Property of the FY Republic of Macedonia 2016-2018*).

In the Republic of North Macedonia the principle of protection of intellectual property is established in the Constitution and the current legislation (Manev and Kushti). For the purpose of this guide we will highlight the most relevant articles of the current legislation, elaborated in the *National Strategy on Industrial Property of the FY Republic of Macedonia 2016-2018* by Manev and Kushti, and in the *Strategy for intellectual property of the Republic of Macedonia 2009 – 2012* by Dabovikj and Zdraveva.

**Article 47**, guarantees the rights that stem from the scientific, artistic or other intellectual works, i.e. the Republic encourages, supports and protects the scientific and technological development.

**Article 30** guarantees ownership and inheritance rights. Pursuant to the Constitution of the Republic of North Macedonia, the ownership creates rights and obligations and it should serve for the benefit of the individual and the community, while the property and rights that arise from it, may not be taken away nor limited, except in case of public interest defined by law.

Pursuant to **Article 31** of the Constitution of the Republic of North Macedonia, a foreigner may acquire the ownership rights in the Republic of North Macedonia under conditions defined by law.

**Article 55** of the Constitution guarantees the freedom of market and entrepreneurship and imposes an obligation to the Republic to ensure equal legal status for all entities in the market.

In the National Strategy on Intellectual Property 2009-2012, the national and international legal sources of the industrial property law in the Republic of North Macedonia were described comprehensively.

Some of the more important legal acts that regulate intellectual property rights in the Republic of North Macedonia are the following:

- Law on Industrial Property (Official Gazette 42/93, 47/2002, 21/2009 and amendments of the Law 2003, 2004, 2006, 2007, 2014, 2015);
- Law on Copyright and Related Rights (Official Gazette of RM no. 47/96, 03/98, 04/05 and 131/07);
- Law on Culture (Official Gazette of RM no. 31/49, 49/93, 82/05, 24/07 and 15/08);
- Law on Protection of Topography of Integrated Circuit;
- Law on Breeder's Rights (Official Gazette of RM no. 39/06 and 52/09) ;

- Law on Wine (Official Gazette of RM no. 69/04);
- Law on Agriculture and Rural Development (Official Gazette of RM no.134/07);
- Law on Customs Measures to Implement the Protection of Intellectual Property Rights (Official Gazette of RM no.88/15, 154/15, 192/15 and 23/16);
- Law on Customs Measures for Protection of Intellectual Property Rights (Official Gazette of RM no. 38/05 and 107/07, 2008);
- Law on Obligations (Official Gazette of RM no. 18/01, 78/01, 04/02, 59/02, 05/03 and 84/08);
- Law on Protection of Competition (Official Gazette of RM no. 04/05, 70/06 and 22/07);
- Law on Consumers Protection (Official Gazette of RM no. 38/05 and 77/07, 2008);
- Criminal Code (Official Gazette of RM no. 37/96, 80/99, 48/01, 04/02, 16/02, 43/03, 19/04, 40/04, 81/05, 50/06, 60/06 and 73/06);
- Law on State Market Inspectorate (Official Gazette of RM no. 24/05 and 81/07);
- Law on Misdemeanors (Official Gazette of RM no. 62/06 and 69/09);
- Law on Litigation Procedure (Official Gazette of RM no. 79/05);
- Law on Criminal Procedure (Official Gazette of RM no. 15/97, 18/99, 44/02, 74/04, 75/06 and 83/08);
- Law on Enforcement (Official Gazette of RM no. 35/05, 44/06, 50/06, 124/06, 129/06, 20/07 and 08/08);
- Law on Securing of Claims (Official Gazette of RM no. 87/07);
- Regulation on the organization and management of the premiere North Macedonia domain MK on the Internet and on the use of sub-domains under it (Official Gazette of RM no. 35/2004, 45/2008);
- Law on Scientific and Research Activities (Official Gazette of RM no. 46/08);
- Law on Enhancing and Supporting the Technological Development (Official Gazette of RM no. 41/08 and 106/08);
- Law on Enhancing and Supporting the Technical Culture (Official Gazette of RM no. 53/00);
- Law on Associations of Citizens and Foundations (Official Gazette of RM no. 31/98);

After 2009 the following legal acts and amendments to the existing ones were adopted:

- Law on Industrial Property (Official Gazette 21/09);
- Amendments to the Law on Industrial Property (Official Gazette 24/11);
- Amendments to the Law on Integrated Circuits (Official Gazette 136/2011).

By way of succession, ratification or accession, a range of international instruments represents a significant resource of law on intellectual property in the Republic of North Macedonia, such as: (Dabovikj and Zdraveva)

- ✓ By a Declaration submitted to the World Trade Organization on Intellectual Property, on 23.07.1993, the Republic of North Macedonia, as a legal successor of the former SFRY, accepted the following:
  - The Convention Establishing the World Intellectual Property Organization ("Official Gazette of SFRJ MD" 31/72) – entered into force on September 8,1991;

- Berne Convention for Protection of Literary and Artistic Works (Official Gazette of SFRY MD no.14/75 and 4/86);
- The Paris Convention for the Protection of the Industrial Property ("Official Gazette of RM" 5/74) – entered into force on September 8, 1991;
- The Madrid Agreement Concerning the International Registration of Marks ("Official Gazette of RM" 2/74) – entered into force on September 8, 1991;
- Decree for Ratification of the Nice Arrangement for International Classification of Goods and Services for the Purposes of Registration of Marks (Official Gazette of RM no.51/74);
- The Locarno Agreement Establishing the International Classification for Industrial Design (Official Gazette of RM no.51/74);
- ✓ Patent Cooperation Treaty ("Official Gazette of RM" 19/95) – entered into force on August 10, 1995;
- ✓ The Hague Agreement Concerning the International Deposit of Industrial Designs-The Hague Act and Complementary Act of Stockholm ("Official Gazette of RM" 71/96) – entered into force on March 18, 1997;
- ✓ Protocol relating to the Madrid Agreement Concerning the International Registration of Marks ("Official Gazette of RM" 12/02)– entered into force on August 30, 2002;
- ✓ Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure and Regulations ("Official Gazette of RM" 13/02)– entered into force on August 30, 2002;
- ✓ Convention on the Grant of European Patents (European Patent Convention) ("Official Gazette of RM" 126/08) - entered into force on January 1, 2009.

The process of harmonization of the national legislation with the legislation of the European Union is within the focus of attention of the Government based on the obligation undertaken according to Article 71 of the Stabilization and Association Agreement. To date, the legislation has been harmonized to a great extent with the sources of the intellectual property law of the European Union (Manev and Kushti, Dabovikj and Zdraveva).

The penalty policy that exists in relation to sanctioning the infringements of intellectual property rights, with the amendments introduced in the criminal legislation shows a clear intention for sanctioning the infringements of intellectual property rights. Taking into consideration that significant interventions have been made in order to incriminate the infringement of intellectual property rights, there is only a need for completing this type of protection through increasing the penalties on responsible persons in legal entities and for infringement of moral rights in the area of intellectual property (Dabovikj and Zdraveva).

The National Intellectual Property Strategy (IP Strategy) 2009-2012 remarked the high degree of harmonization of the national legislation with the European, in particular, LIP, but simultaneously pointed out the necessity certain interventions to be done. In particular - it is the necessity to ensure horizontal harmonization of legislation in terms of the measures for enforcement of the intellectual property law, covered by Directive 2004/48/EC, and also the necessity to review the national legislation that regulates matters such as the transfer of intellectual property rights (Manev and Kushti).

In the National Strategy on Industrial Property of the FY Republic of Macedonia 2016-2018, Manev and Kushti have explained in details the procedures for registering patents, trademarks, industrial designs and geographical indications:

The legal protection of the inventions is regulated in the Law on Industrial Property and the Patent Regulations. After filing the patent application, the first act that the Office issues are the Filing date notification. The second phase is the formal examination and the third phase is the examination before the Office. After this, follows the final decision on whether to grant the patent or not. Depending on the response of the applicant, the procedure lasts around 3 months. The patent is registered in the register of the patents and the decision is published.

Regarding the registration of the Trademarks, the first document that is issued by the Office is the notification for a filing date. After that, the Office is sending a notification for paying the publication fees. After this, the application is being published and is waiting for 3 months in order to see whether there is any opposition or not. After that, if there isn't any opposition, the Office issues a notification for the payment of registering fee. After the payment of the fee, the trademark is registered. The trademark is registered in the register of the trademarks and the decision is published the entire procedure lasts around one year according to the actual practice.

Regarding the registration of the Industrial design, the first document that is issued by the Office is the notification for a filing date. After that, the Office is sending a notification for paying the publication fees. After this, the application is being published and is waiting for 3 months in order to see whether there is any opposition or not. After that, if there isn't any opposition, the Office issues a notification for the payment of registering fee. After the payment of the fee, the industrial design is registered. The industrial design is registered in the register of the industrial design and the decision is published. The entire procedure lasts around three months according to the actual practice.

Geographical indications, the procedure for geographical name protection i.e. for granting the right to use a protected geographical name shall be initiated by an application which contains a request for geographical name protection i.e. request for granting the right to use the protected geographical name and other supplements. The steps are as follows: the first step is the formal examination after which we are issuing a decision to register the same (no fees at all). The registered right is registered in the registers of the Office for GIs and it is published. The entire procedure lasts around one month.

There are some important international instruments that regulate intellectual property rights but the Republic of North Macedonia has not signed them yet:

- Agreement on the Right to a Patent;
- Agreement on the Right to a Trademark;
- Vienna Agreement Establishing an International Classification of the Figurative Elements of Marks;
- Lisbon Agreement for the Protection of Appellations of Origin of Products and Their International Registration;
- Agreement on the Application of Article 65 of the EPC - London Agreement.

## 4. Mechanisms

We have concluded that technology transfer activities realize the exchange and transfer of technology in various forms, among academic institutions, industry and government agencies. It can be implemented in many different forms. Among them are a publication of research results in scientific journals, books and articles, strategic research partnerships between universities and industries, industry sponsored research, consultancy, new start-ups or spin-offs, licensing etc.

Many authors agree in the fact that technology transfer process is actually a whole composed of a number of distinct stages.

We can conclude that there are different mechanisms of technology transfer between the researchers and the users. In addition, we will consider the most important ones.

### 4.1. Main mechanisms of technology transfer<sup>1</sup>

- **The License agreement** is the transfer of less-than-ownership rights in intellectual property from a technology developer to a technology user. It is the legal permission by the technology developer to user organization to perform, in the Republic of North Macedonia for the duration of the patent rights, one or more of the “actions” which are covered by the exclusive rights to the patented invention in the Republic of North Macedonia. This permission can be exclusive to the user or non-exclusive, and it is mostly preferred by the small business. The license agreement usually includes terms and conditions, which will be set out in the written document by which the license is granted to the licensee.

- **Science Park, Research Park, Technology Park or incubators.** These are installations on a given area, usually close to a university. Often assistance is given to the university by a hi-tech companies. The main fund providers in this mechanism are all the participating companies and the researchers. The most common form of this mechanism in the Republic of North Macedonia are the incubators.

- **The Joint venture of R&D and joint research projects** is a mechanism through which a contract is drawn between a university or another research institute, and a contractor. The costs in this type of agreement, associated with the work, are shared between the parties in the agreement according to specific conditions specified in the contract. It is an alliance between two or more separate organizations who can work together in all stages of the technology transfer process (from R&D to commercialization). We can say that this mechanism has a very high probability of successful technology transfer as a result of the joint knowledge, experience, costs etc.

- **Consultancy agreement** is a mechanism based on the help of one or more parties from the university or research center who will manage, provide advice information and other services concerning the technology transfer process. This mechanism can be of different forms such as: advisory committee, university center or industrial liaison units, management foundation, informal grouping of companies

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<sup>1</sup> read more: [http://shodhganga.inflibnet.ac.in/bitstream/10603/14849/13/14\\_chapter%206.pdf](http://shodhganga.inflibnet.ac.in/bitstream/10603/14849/13/14_chapter%206.pdf) ; <http://www.icfitt.com/ttm.html> .

etc. In the Republic of North Macedonia, this mechanism can be useful if the government or other organizations wish to acquire technology from organizations in other, more developed countries. In this kind of agreements, besides the help, organizations gain a lot of experience and often learn valuable lessons.

- **Cooperative R&D agreement** is a mechanism based on cooperation between one or more university research laboratories and one or more companies. According to this agreement the academia side provides professional personnel, facilities etc., and the industrial side provides funds, personnel, equipment etc.

- **Collegial interchange, conference, publication** is very common mechanism for technology transfer in the Republic of North Macedonia. It is the first step of creating a link between research centers and industry. It is an informal mechanism based on free exchange of information among colleagues e.g.: different kinds of presentations on conferences, publications in professional journals and magazines etc.

- **The Sale or Assignment of IP Rights** is a mechanism with which the technology owner sales all exclusive rights to a patented invention, to another organization that accepts to purchase those rights. It is very important to mention here that this transaction happens without any restriction on time or any other conditions.

- **Know-How Contract** is a kind of agreement with which the innovator transfers the know-how to the user. The most important aspect of this mechanism is that it can be in tangible form or in intangible form. When we say tangible, we really mean documents, photographs, blueprints etc. Intangible forms of know-how transferring are practically explaining the process, training given by innovator to the user etc.

- **The Exchange program** is a mechanism of technology transfer based on exchange personnel between the researcher's laboratory and industry as a user. With this mechanism both sides involved, give and receive expertise to/from the other side.

- **Memorandum of Understanding (MOU)** is used in joint technology development projects in order to provide cooperation and coordination framework. The agreement helps to ensure smooth operations with shared resources or workflow.

- **Contract research** is a contract realized between a company and a research center. According to this type of contract, the funds are provided by the company in order a research and development activities to be performed by the researcher in a previously defined timeframe. Through this mechanism, the companies utilize the unique capability of the research centers that work for commercial benefit.

- **Training** is a mechanism through which the technology is being transferred with different kinds of training. In that context, students are often exposed to the methods and requirements of the job, the staff in the companies is trained in order to improve their skills or knowledge, potential managers are given lectures in managing etc. This is a commonly used way of transferring the research results by the universities.

- **New start-up or spin-offs** is a mechanism concerns the university spin-offs. According to this mechanism, sometimes a new company is created to exploit commercially the research results, some knowledge or technology developed within a university.

- **Technology donations** is a mechanism through which the technology inventor offers the developed technology as a charity or gift for a cause to a company, industry, country etc.

In the Republic of North Macedonia, the use of the mechanisms of technology transfer varies depending on the characteristics of the technology being transferred, the type of industry involved, the available funds of the companies, the rate of technological change needed etc.

## **5. Guidelines for the stages in the transfer of innovations and technologies in North Macedonia enterprises and its documentation**

### **5.1. Main stages in the innovations and technology transfer process**

The full process of innovation and technology transfer consists of several stages from plain idea through developed innovation and final commercialization of the new technology. In addition, we will mention the main three stages of the full process of innovation and technology transfer.

Many universities, companies and governments are now dedicated to identifying new ideas which have the potential to be commercially exploited. After identifying the ideas, they work on developing new technology based on that idea. The new technology may refer to new equipment, new process, know-how, updated an existing ones etc.

After developing the new technology, the research centers are dedicated to prove their ownership of the innovation and to protect their intellectual property rights. According to the type of innovation, the procedures for getting intellectual property rights vary widely. This is the crucial stage in the transfer of innovations and technology process because in this stage, the relevant institutions either confirm the uniqueness of the 'innovations', and approve the researcher's request for exclusive intellectual property rights, or deny their requests. In North Macedonia law, there are well-established procedures for recognition and granting of intellectual property rights, and we will elaborate them in details in the following text.

If the North Macedonia relevant institutions confirm the uniqueness of the innovation and decide to grant the intellectual property rights to the researcher, then the transfer of the new technology may occur in specified conditions. As we mentioned before, there are many different mechanisms for transferring the technology from its developer and legal owner, to its future users. In this context, they choose the best mechanism for their cooperation by mutual agreement.



## 5.2. Guidelines for the procedures for recognition of intellectual property rights in the Republic of North Macedonia

### 5.2.1. Patent grant procedure

The patent grant procedure begins with the submission of an application to the State office of industrial property of the Republic of North Macedonia. The content of the patent application is regulated in the Law on Industrial Property and according to the law, the application must include the following (Veljanovska, 2014):

- request for patent recognition;
- innovation description;
- one or more patent requests;
- short description of the essence of the innovation (abstract);
- a draft reference to the description and the patent application (if needed);
- a proof of paid application fee;
- Macedonian translation if the application is submitted in foreign language

The content and form of the application are established in the Patent regulations. The first act, after submission of an application to the State office of industrial property is confirmation of the **submission date** if the application includes:

- a clear indication for patent grant procedure;
- information for the submitter of the application (name and address);
- a part which can be considered as a description of the invention.

In case the application doesn't include all three elements, the Office informs the submitter for incomplete application and gives him 60 days to complete it.

The confirmation of the submission date is very important in this stage, because with it, the submitter gets the so-called 'priority right'. With it, the submitter has a priority if anyone else tries to patent the same innovation after his submission date.

The application is being entered in the Register of patent applications, and after that, the **formal examination** is performed by the Office. For this purpose, the Office examine:

- if the application fee has been paid;
- if there is Macedonian translation of the application, if it was submitted in a foreign language;
- if the submitter has declared for implementation of the examination procedure;
- if a draft reference to the description and the patent application has been submitted;
- if a letter of authorization is been submitted (if the application was submitted by a representative).

In case the application doesn't include all five elements, the Office informs the submitter for incomplete application, and gives him 60 days to complete it.

The examination of the degree of the innovation and inventive contribution is performed in the stage called **fully examination**.

After the examination of the application the State office of industrial property of the Republic of North Macedonia decides either to grant the patent rights to the submitter or not. If they decide to grant the patent right, they publish the final decision and register the patent in the Register of the patents.

## 5.2.2. Industrial design grant procedure

The industrial design grant procedure begins with the submission of an application to the State office of industrial property of the Republic of North Macedonia, or directly in the International Bureau of the World intellectual property organization.

An author of industrial design can be a person who has created the design. An author cannot be a person who only gave technical assistance in the process of creation of the design.

The industrial design grant application must include:

- request for recognition of the right for industrial design;
- information for the application submitter;
- a display of the design which is requested to be protected

In case the application doesn't include all elements, the Office informs the submitter for incomplete application, and gives him 30 days to complete it.

After the application is completed the Office confirms the submission date, and the submitter gets the priority right.

The industrial design grant application is registered in the Register for industrial design applications, and after that, the Office checks if:

- the application includes all parts and attachments provided by the Law on Industrial Property and Industrial design rulebook;
- letter of authorization is been submitted (if the application was submitted by a representative);
- there is Macedonian translation of the application, if it was submitted in a foreign language;
- the application fee has been paid, and proof for that is submitted.

In case the application doesn't include all elements, the Office informs the submitter for incomplete application, and gives him 60 days to complete it.

If the application for industrial design is complete, and in accordance with all procedures, the Office give the submitter 30 days to pay the fees for the publishing of the application information. If the submitter pay the fees, the Office publish the information and wait for 90 days in order to see whether there is any objection or not. An objection may be submitted by:

- a submitter of previously submitted industrial design and holder of a previously recognized right of industrial design;
- a holder of a previously recognized right of industrial property if the subject of that right is identical or similar to the published industrial design;
- a person who has copyright of a subject that is identical or similar to the published industrial design;
- an interested person who considers that the published industrial design does not meet the requirements for novelty and individual character or is exclusively conditioned by the functional characteristics of the product;

After 90 days, if there are any justified objections, the Office decides to reject the application.

After waiting for 90 days, if there are not any objections, or if the objections are not justified, the Office approves the application and gives the submitter 30 days to pay the maintenance fee for the first five years, publishing fees and fees for the industrial design document.

The office publishes the decision and registers the industrial design in the Register of the industrial designs.

### **5.2.3. Trademark grant procedure**

The trademark grant procedure is regulated by the Law on Industrial Property and it begins with the submission of a trademark application to the State office of industrial property of the Republic of North Macedonia.

The trademark grant application must include:

- a request for recognition of the trademark right;
- information for the application submitter;
- a look of the mark requested to be protected;
- a list of the products and services requested to be protected.

The full content of the trademark application is prescribed in the trademark rulebook. The date when a complete application is received by the Office is considered as submission date of the application, and the Office will register the application in the Register for trademark applications, and from this date, the submitter gets the priority right.

Next step is the formal examination of the application, and now the Office examines if:

- the application includes all parts and attachments provided by the Law on Industrial Property and Trademark rulebook;
- letter of authorization is been submitted (if the application was submitted by a representative);
- the application fee has been paid, and proof for that is submitted.

If the application for a trademark is complete, and in accordance with all procedures, the Office give the submitter 30 days to pay the fees for the publishing of the application information. If the submitter pay the fees, the Office publish the information and wait for 90 days in order to see whether there is any objection or not. An objection may be submitted by:

- a submitter of previously submitted trademark and holder of a previously registered trademark;
- a holder of a trademark registered in a member country of the Paris Union or WTO, for which his representative submitted an application in the Republic of North Macedonia, without his permission.
- a person whose name, surname or face is identical or similar to the published mark;
- a holder of previously protected industrial property right, if the subject of that right is identical or similar with the published mark;
- a person who has copyright of a subject that is identical or similar to the published mark;
- a holder of a trademark whose validity has expired due to the expiration date.

After 90 days, if there are any justified objections, the Office decides to reject the application.

After 90 days, if there are not any objections, or if the objections are not justified, the Office approves the application and gives the submitter 30 days to pay the

maintenance fee for the first ten years, publishing fees and fees for trademark document.

The office publishes the decision and registers the trademark in the Register of the trademarks.

#### **5.2.4. Geographical indications procedure**

When elaborating the geographical indications procedure, we need to make a clear distinction between the legal procedures for **geographical name protection**, and procedure for acquiring the **right to use the protected geographical name**.

So, first we need to protect the geographical name as a **protected designation of origin** or **protected geographical indication**, and after that we can request for a right to use the protected name.

The geographical indications procedure (protected designation of origin or protected geographical indication) begins with the submission of an application which includes request to protect the geographical indications. Such application may be submitted by:

- natural and legal persons who in a certain geographical area produce a product that is marked with the name of that geographical area;
- group of producers and processors of the same products, regardless of the form of association;
- state body, unit of local self-government and chambers interested in the protection of the geographical names of the territory of their activity;
- foreign natural and legal persons, foreign producer groups, only if the right of an authorized user for a protected geographical name is recognized in the countries of origin and if they fulfill the requirements stipulated by the Law on Industrial Property.

The submitted application is registered in the Register for geographical indications applications, and if it not completed, the Office informs the submitter for incomplete application, and gives him 30 days to complete it.

If the Office decide that the application is complete and in accordance with all the procedures, the Office approve the application and decides to protect geographical indications as a protected designation of origin or protected geographical indication. They register the geographical indications in the Register for protected geographical indications, and publish the decision.

The procedure for acquiring the right to use the protected geographical indications as a protected designation of origin or protected geographical indication, begins with the submission of an application for acquiring the right to use the protected geographical indications. The submitted application is registered in the Register for applications to use the protected geographical indications, and it includes:

- request for acquiring the right to use the protected geographical indications;
- evidence for performing the certain activity;
- evidence for accomplished control.

In case the application doesn't include all elements, the Office informs the submitter for incomplete application, and gives him 30 days to complete it.

If the Office decide that the application is complete and in accordance with all the procedures, the Office approves the application and gives a decision on recognition of the right to use the protected geographical indications. They register the users of geographical indications in the Register for users of protected geographical indications, and publish the decision.

## **6. Technology transfer centers and other institutions supporting technology transfer in the Republic of North Macedonia**

### **6.1. Technology transfer centers**

#### **6.1.1. INNO-FEIT**

The Faculty of Electrical Engineering and Information Technologies (FEEIT), as a part of the Ss. Cyril and Methodius University in Skopje, keeps pace with the best institutions in its areas of expertise worldwide. FEEIT is one of the best engineering faculties in the Republic of North Macedonia with the highest level of research orientation being part in numerous international and national research and applicative projects. The educational staff, employed in the faculty is worldwide renowned in the engineering society through their highly cited publications, patents and awards.

In order to satisfy the need for more tight cooperation between the academia and the industry, FEEIT opened the Centre for Technology Transfer and Innovations – INNO-FEIT as a part of its efforts to close the gap between academic education and practical expertise and prepare its students for better coping with the industrial challenges ahead. INNO-FEIT is practically a hub for interaction among FEEIT staff, FEEIT students and industrial partners that will foster connections and transfer of technology as well as novel innovative ideas that will aid the economic growth of the sector and the society in general.

INNO-FEIT is a co-founder of the Accelerator UKIM and a selected candidate by European Investment Bank (EIB) to become a Centre-of-Excellence in its fields of interest.

It also has a network of local and regional companies ready to assist at any time to start-ups coming from FEEIT. INNOFEIT offers them:

- Pre-incubation
- Access to FEEIT laboratories
- Mentoring and coaching
- Access to finance and market through a partner network.

#### **6.1.2. Technology transfer center in MTU**

The objectives of the technology transfer center as a part of “Mother Teresa” University (MTU) – Skopje, financed by the Ministry of Economy, are to improve, strengthen and stimulate the transfer of technology and innovations from the academic environment to existing and emerging innovative SMEs. It provides excellent knowledge in the areas of ICT, renewable energy and energy efficiency, valorizing research results by creating a collaborative platform between academics, students and entrepreneurs in order to overcome the gap between the academic environment and the industry. That will strengthen the growth potential of the regional ecosystem from existing and emerging high-tech-oriented small and medium-sized enterprises.

## 6.2. Macedonian Academy of Sciences and Art (MASA)

The Macedonian Academy of Sciences and Arts (MASA) was established in 1967 as the highest scientific, scholarly and artistic institution in the Republic of North Macedonia, which monitors and stimulates the development of sciences and arts. This institution is mainly financed by the North Macedonia government, but also it complements such funds with finance from international projects and grants. MASA is in principle one of the key institutions for the development of science, research, innovation and new technologies in the country. Its goals are being achieved through the work of the following research centers:

- Research Center for Energy and Sustainable Development;
- Research Center for Genetic Engineering and Biotechnology „Georgi D. Efremov“;
- Research Center for Areal Linguistics “Bozidar Vidoeski”;
- Research Center for Computer Science and Information Technologies;
- Lexicographical Center;
- Research Center for Cultural Heritage;
- Research Center for Environment and Materials;
- Center for Strategic Research.

## 6.3. State Office of Industrial Property – SOIP

SOIP is an autonomous organ of the North Macedonia administration, responsible for the affairs related to acquiring and protecting industrial property rights. The main responsibilities of SOIP are:<sup>2</sup>

- Receives the applications for recognition of industrial property rights ;
- Implements administrative procedures for the acquisition of industrial property rights in the Republic of North Macedonia;
- Implements international procedures for recognition of industrial property rights in accordance with the international agreements to which the Republic of North Macedonia has acceded;
- Keeps registers of applications and acquired rights ;
- Publishes data on reported and recognized industrial property rights in the official newspaper;
- Makes publicly available databases of recognized industrial property rights ;
- Represents the country in international, European and regional intellectual property organizations;
- Monitors the development of international and European legislation and initiates harmonization of national legislation ;
- Initiates ratification of international agreements in the field of industrial property;
- Provides information on the procedures for the protection of industrial property rights in North Macedonia and abroad ;
- Provides search services in databases in the field of intellectual property ;

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<sup>2</sup> read more <http://www.ippo.gov.mk/EN/AboutSOIP.aspx>

- Promotes the protection of industrial property ;
- Conducts training and examination for representatives in the field of industrial property.

## **6.4. Fund for Innovation and Technological Development – FITD**

By creating the FITD, the North Macedonia government shows a clear indication to give its support in the field of innovation and IP in general. The mission of the FITD is to encourage and support innovation activities in micro, small and medium-size enterprises (MSMEs) in order to achieve more dynamic technological development based on knowledge transfer, development research and on innovations that contribute to job creation, and to economic growth and development, while simultaneously improving the business environment for the development of competitive capabilities of companies.<sup>3</sup>

The goals of FITD are being achieved through four financial instruments for support of innovation and technology development:

- Co-financed grants for newly established enterprises “Start-up” and “Spin-off”;
- Co-financed grants and conditional loans for commercialization of innovations;
- Co-financed grants for Technology Transfer;
- Technical assistance through Business-technology accelerators.

## **6.5. The Center for Knowledge Management**

The Center for Knowledge Management (CKM) is a research center established in 2008, with an aim of enhancing and improving knowledge management processes in all societal spheres in Republic of North Macedonia and the SEE region. Covering a wide area of activities performed in collaboration with the civil sector, the state, and public administration and the profit sector, CKM’s vision is to become an active actor in the institutional and economic development of the country, and the region in general.<sup>4</sup>

The center has implemented various local and international projects in a wide range of expertise like knowledge management, IT, development and strategic management.

## **6.6. Ministries**

### **6.6.1. Ministry of education and science**

Ministry of Education and Science is the key governmental institution concerning to education, science, technology, research and innovation. The Ministry of Education and Science’ remit covers higher education, vocational education and

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<sup>3</sup> read more <http://www.fitr.mk/portfolio-item/mission-and-aims/?lang=en>

<sup>4</sup> read more <http://www.knowledge-center.org/index.php/en/about-us>



international scientific-technical cooperation. The ministry's main responsibilities are to develop and promote the educational system in the Republic of North Macedonia, to develop science, scientific achievements and innovations, to improve the pupils' and students' standard, to increase the technological development etc.

### **6.6.2. Ministry of the information society**

The activities of this Ministry are particularly important, bearing in mind the information and communication technologies that serve as a platform for the creation of intellectual property works, but also in establishment and operation of a system for the exchange of information among competent institutions (Dabovikj and Zdraveva). The main activities of the Ministry of information society are:

- provision and management of funds for financing the development of the information society;
- coordination and monitoring of the implementation of accepted projects for the development of information society in state administration bodies;
- creation of policies and giving recommendations and guidelines for implementation of strategic and operational documents for information and telecommunication technologies;
- coordination, management and development of integrated safe information and communication network for the needs of the state administration bodies;
- promotion of the use of electronic services; establishment, development and use of databases and their connection and exchange of information in a safe way in the state administration bodies;
- realization of technical and technological international cooperation.

### **6.6.3. Ministry of economy**

The Ministry of economy is responsible for the national strategies for SME development, FDI and industrial policy. As such, it is an active policy maker in relation to innovation matters; the three mentioned policy areas have their own strategies and annual programs, all of which touch upon aspects of competitiveness and innovation, albeit with a strong emphasis on enterprise development. (OECD, 2011).

### **6.6.4. Deputy prime minister for economic affairs**

The Deputy Prime Minister for economic affairs has overall responsibility for economic policy reform (including business environment, SMEs, FDI and regulatory reform), coordination and implementation. Since innovation policy is cross-cutting or horizontal in nature, he has a strong interest in any future innovation policy which may evolve. The cabinet of the Deputy Prime Minister acknowledged the existence of a policy gap as far as innovation is concerned (OECD, 2011).

## References

1. Bojan P., Commercialization of patents and know-how from academia to industry, joint ventures, avoiding the pitfalls, contractual issues, Slovenian intellectual property office, Ljubljana, Slovenia;
2. Dabovikj A. J., Zdraveva N., Strategy for intellectual property of the Republic of Macedonia 2009 – 2012, Ministry of Economy;
3. Das S. (1987). Externalities and Technology Transfer through Multinational Corporations. *Journal of International Economics*, 171-182.
4. Devine, M. D., James, T. E. Jr. & Adams, T.I. (1987). Government Support Industry-University Research Centres: Issues for Successful Technology Transfer. *Journal of Technology Transfer*, 27-37.
5. Gibson, D.V. & Slimor, W. (1991). Key Variables in Technology Transfer: A field – Study Based on Empirical Analysis. *Journal of Engineering and Technology Management*, 287- 312.
6. Grange L.I., Buys A.J., A review of technology transfer mechanisms, Institute for Technological Innovation, University of Pretoria, Pretoria, South Africa, 81-99.
7. Herlandí D.S.A., Messias B.S., Adriano R., Vanessa C.G.C., Risk and Success Factors in Technology Transfer, *Int. Journal of Engineering Research and Application*, 2017, 66-71;
8. Kozmetsky, G. (1990). The Coming Economy. In: Williams F., Gibson, D.V., (Eds.). *Technology Transfer: A Communication Perspective*, Newbury Park, CA: Sage Publications.
9. Kumar V., Kumar U., & Persaud A. (1999). Building Technological Capability through Importing Technology: The Case of Indonesian Manufacturing Industry. *Journal of Technology Transfer*, 81-96;
10. Lan, P., & Young, S. (1996). International Technology Transfer Examined at Technology Component Level: A Case Study in China. *Technovation*, 277-286;
11. Manev K., Kushti A., National Strategy on Industrial Property of the FY Republic of Macedonia 2016-2018, AECOM International Development Europe SL;
12. Mansfield E., *Technology Transfer, Productivity, and Economic Policy*, W. W. Norton & Co., New York 1982, p.28.
13. Nattacia D., Suzana T.K., Rozita T.H., A case of technology transfer in Macedonia, (2013), *Technology Transfer and Innovations*, 2nd Annual Conference & Networking, 55-64;
14. Sazali A.W., Haslinda A., A Review on the Technology Transfer Models, Knowledge-Based and Organizational Learning Models on Technology Transfer, *European Journal of Social Sciences*, 2011, 550-564;
15. Sazali A.W., Suzana I.W.O., Defining the Concepts of Technology and Technology Transfer: A Literature Analysis, *Article in International Business Research*, 2012, 61-71;
16. Stankovic M., Stankovic B., *Technology Transfer in the Republic of Macedonia: Recommendations for Successful Public Policies*, SOIP, 2013
17. Tenkasi, R.V. & Mohrman, S.A. (1995). Reviewing the Behavioral Science Knowledge Base on Technology Transfer. *National Institute on Drug Abuse, Research Monograph 155*, 147-168.

18. The Former Yugoslav Republic of Macedonia: review of the national innovation system, OECD, 2011;
19. Veljanovska S., Pravo na intelektualna sopstvenost, Kichevo, 2014;
20. William, F. & Gibson, D.V. (1990). Technology Transfer: A Communication Perspective. Sage, Beverly Hills, CA;

## Useful websites

1. [http://shodhganga.inflibnet.ac.in/bitstream/10603/14849/13/14\\_chapter%206.pdf](http://shodhganga.inflibnet.ac.in/bitstream/10603/14849/13/14_chapter%206.pdf);
2. <http://www.economy.gov.mk/>;
3. <http://www.fitr.mk/portfolio-item/mission-and-aims/?lang=en>;
4. <http://www.icfitt.com/ttm.html>;
5. <http://www.inno.feit.ukim.edu.mk/>;
6. [http://www.ippo.gov.mk/MK/Index\\_mk.aspx](http://www.ippo.gov.mk/MK/Index_mk.aspx);
7. <http://www.knowledge-center.org/index.php/en/about-us>;
8. <http://www.manu.edu.mk/en>;
9. <http://www.mio.gov.mk/>;
10. <http://www.mon.gov.mk/>;
11. <http://www.scienceportal.org.by>;
12. [https://en.wikipedia.org/wiki/Technology\\_transfer](https://en.wikipedia.org/wiki/Technology_transfer);
13. <https://slideplayer.com/slide/14659345/>;
14. <https://www.britannica.com/technology/technology>;
15. <https://www.greyb.com/technology-shifts-can-give-first-mover-advantage/technology-shift-technology-life-cycle/>;
16. <https://www.innovationpolicyplatform.org/>;
17. <https://www.referenceforbusiness.com/management/Str-Ti/Technology-Transfer.html>;
18. <https://www.slideshare.net/sourabharay/technology-transfer-65315621>;
19. <https://www.smu.ca>;
20. <https://www.vicpremier-ekonomija.gov.mk/>;
21. [https://www.wipo.int/export/sites/www/sme/en/newsletter/2011/attachments/apax\\_tech\\_transfer.pdf](https://www.wipo.int/export/sites/www/sme/en/newsletter/2011/attachments/apax_tech_transfer.pdf);