

Fostering Innovation in the Danube Region through Knowledge Engineering and IPR Management

Open innovation, Technology Transfer, and IPR
management

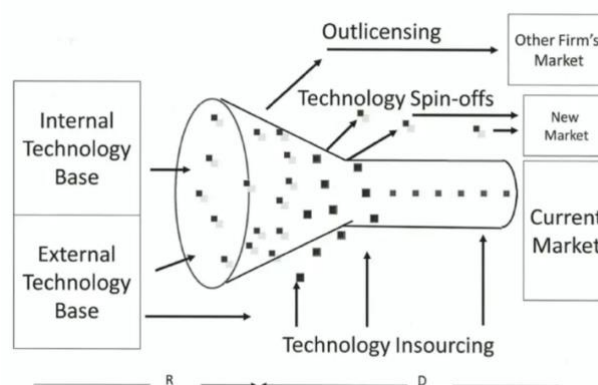
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Living in a world of Open Innovation

“The only constant in life is change” was said by Ancient Greek philosopher Heraclitus. In today's interconnected world, the change is desired to be driven since the situation otherwise seems to be ‘out of control’ (Rončević and Modic, 2012, p.313). EU for example reduces the risks by heavy investments in research and innovation through mechanisms as H2020 (see more in Jurak, 2019). The recent events in the world, the COVID-19 pandemics, and the threat of a global economic crisis did contribute to understanding and mutual agreement that innovation is a key tool to manage and control global trends. The global trends therefore are understood as omnipresent forces that stem from the past, shape the present, and will have an impact on the future (Singh et.al, 2009).

Following the definition, the concept of Open innovation embraces the essence of the innovation process. Chesbrough et al (2006) define open innovation as ***“the use of purposive inflows and outflows of knowledge, to accelerate internal innovation, and to expand the markets of for external use of innovation”***.



Source: Chesbrough, 2012, p.23

In the above picture 1, it is visible how Chesbrough (2012) explains the dynamic relationship between market, market creation, and organizations operating in such conditions. With a strong technological base, both internal and external, the organization can develop their research activities with internal and external partners to assure position at the primary market, via spin-off companies the new markets are created and with engaging in out-licensing, the organization assures a share in other organizations' markets. There are three stages of Open innovation process that include: a) research, b) development and c) commercialization (Bujor and Avasilcai, 2018). For each of the initial ideas there are three mentioned stages before the invention (if research is successful if development is possible and if product is commercialized) reaches the market.

Another important aspect of Chesbrough's definition of open innovation is the two-fold nature of relationship towards innovation generation. Bujor and Avasilcai (2018) noticed the flow of innovation being: a) outside in, and b) inside out. The outside-in view focuses on processes of opening up to external sources of knowledge and information to increase research and innovation efficiency, where the second view allows the company to release the unused and underutilized ideas to other business for them to use better.

On the other hand, the Chesbrough's (ibid) definition of Open innovation is concerned with business models a firm use and can use to successfully embrace the openness of their boundaries. One of the mechanisms is most definitely IP protection. Innovations protected by IP can be "commercialized by the company, business models are created, and capital investments are required to create growth. The real social impact of innovation only arrives after it is commercialized." (Chesbrough, 2012, p. 22). The main dynamics Chesbrough is interested in are the one embracing the view of the Organization as the main generator of innovations and the organization's concern on how to commercialize the innovation to assure financial success to fund further development and growth

What is Technology Transfer

As defined at the webpages of the European Commission, Technology transfer (TT) refers to the process of conveying results stemming from scientific and technological research to the market place and wider society, along with associated skills and procedures, and is as such an intrinsic part of the technological innovation process.

Technology transfer is a complex process that involves many non-scientific and non-technological factors, and many different stakeholders. Good or high-quality research results are not enough for successful technology transfer; general awareness and willingness both at the level of organisations and individuals, as well as skills and capacity related to specific aspects, such as access to risk finance and intellectual property (IP) management, are also necessary components.

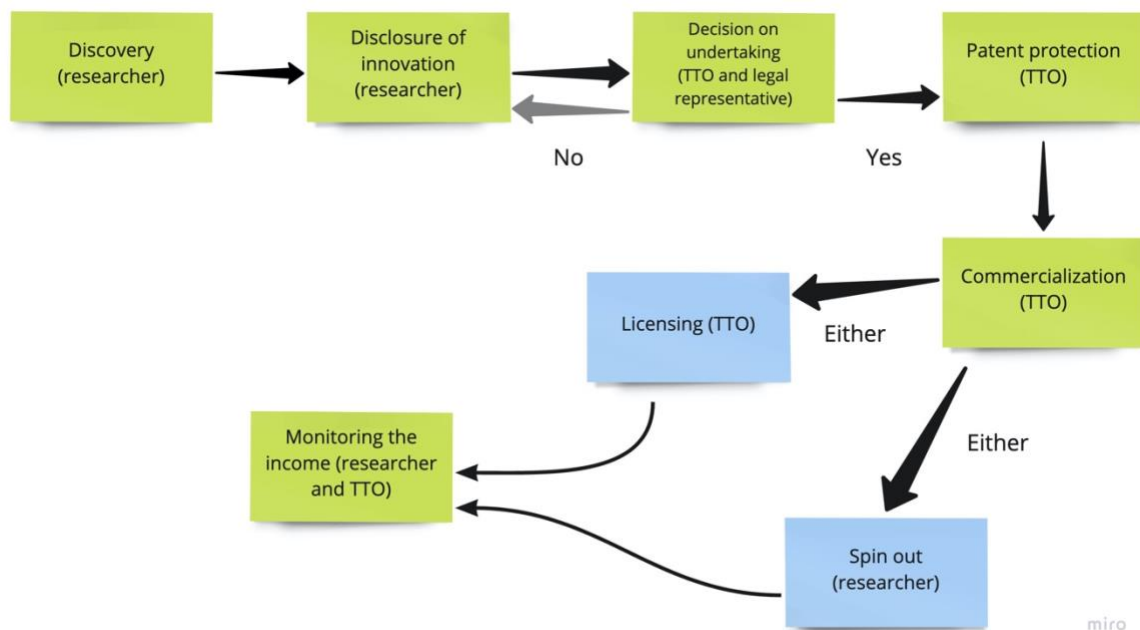
The fundamental steps of the technology transfer process are depicted in the figure below.

Technology transfer covers the complex value chain linking research to its eventual societal deployment. This begins with the discovery of novel technologies at research institutions, followed by the disclosure, evaluation, and protection of these technologies. The next steps include marketing, potential licensing agreements and the development of products based on technological inventions. The financial returns of these products can then, for instance, be used for further research.

Technology Transfer process

In the below diagram we elaborate on how the process of Technology Transfer work. We summarise the description as provided by Modic, Hafner, and Fric (2018)

In the first phase, we have a researcher with a discovery, developed until the working prototype. In the second step, the researcher decided to disclose the innovation and he/she approaches the Technology Transfer officer for an informative interview. The TTO officers carefully examine the patent databases (KnowING HUB for example) and market implemented solutions. If TTO officers evaluate the invention has market potential, the decision on the undertaking is accepted. If innovation has market potential, the TTO applies to patent protection and decides on the commercialization of the patent. Commercialization can be done through two mechanisms, either through licensing or through the spin-out company. In both cases the monitoring of financial success is necessary. In the case of licensing the TTO conducts the monitoring and in the second case, the researcher as head of spin-out monitors the income.



Source: Modic, Hafner, Fric (2018)

Basic lessons for Technology Transfer Officers

There are several reasons why universities and SMEs should be interested in technology transfer. Among important ones the co-creation of social impacts, evidencing the applicative research work, raising the institutional prestige, improving the contacts with industry and other stakeholders in the ecosystem, creating economic income etc.

Commercialization of patents demand several principles:

- Strategically deciding what are goals of commercialization and
- Covering the costs arising from the commercialization of an invention
- Never to determine the maximum profit
- Make as many licensing contracts as possible.

The below-elaborated lessons for TT officers are adapted from Modic, Hafner, Fric, 2018.

Lesson no1: Know when to patent

Lita Nelsen (2007) head of the Technology Transfer Office at MIT suggest to seek the responses to the following questions:

- Is it possible that innovation will gain the patent with patent claim wide enough to protect not only minor changes but will rather contribute towards the better protection of the product itself or product line?
- If patented, the product will attract the licensee and regain the costs of patenting?
- Does patenting leads to the most social impacts?

Responses to these questions are not always clear and straightforward but are rather context-dependent.

Lesson no2: The importance of licensee

Who do you select as a licensee is dependent on the goals you seek but the licensee is a partner who will exploit the product up to its fullest and will be willing to invest in co-development if needed?

Lesson no3: Do not sell your patent

Selling the patent is the least desirable option. The main reason is in the fact that by selling the patent the inventor loses all rights over the patent even in the buyer decides not to

commercialize it. In case the product gets commercialized and is very successful, the buyer does not get any success rewards.

Lesson no4:

Cover the cost and think about future revenue generation

The patent itself is a great cost. Maintaining the patent is also costly, so lesson no4 makes sure the inventor gets costs refunded. Licencing is a mechanism that enables following this lesson also in the long run.

Lesson no5:

Start-up is not always a good response

Patent holder, especially this goes for researchers, can choose between licensing or becoming an entrepreneur with own start-up (or academic start-up). In principle, more appropriate as, start-ups are those ideas that are more revolutionary, more disruptive or can be used for several purposes. Such ideas, that can form a strong case for intellectual property. The inventions more incremental are more appropriate to be licensed.

Rules of IPR Management

1. Drafting and assessing your portfolio

When considering implementing IPR management in your company firstly you have to undertake a thorough analysis of your patent portfolio. Namely, you have to determine what is the status of your IP assets (patents, utility models, designs, trademarks, copyright, trade secrets, and geographical indications & appellations of origin your company own). IP audit is to be done, to have a systematic overview of the legal status and value of each of the IP asset. In this phase KnowiNG HUB is a beneficial tool, to perform initial patent analytics.

After determining the IP portfolio, another assessment is needed. Namely, not all IPR assets have the same commercial potential. At this stage, we propose the use of the Boston Matrix (Reeves et.al, 2020). A simple worksheet can be used to assess the following distinctions IPR assets.

Evaluation is done taking into account the potentials on the side of Market Growth Rate and on the side of the Relative Market share. The Boston Matrix suggests four types of products:

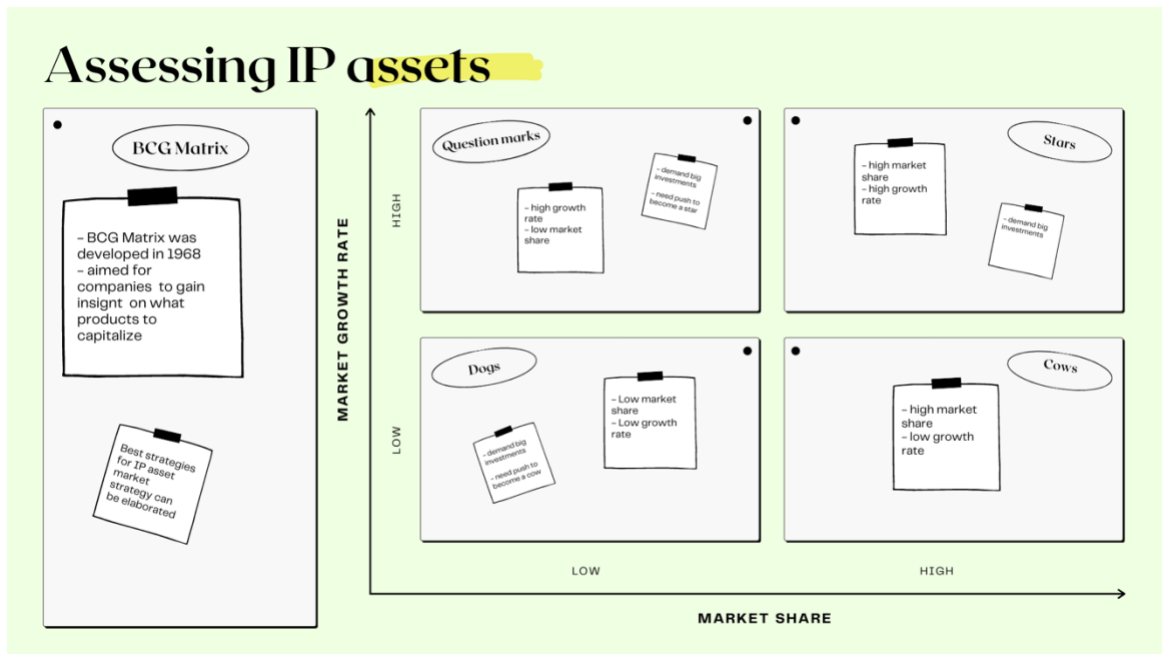
Dogs – Hold low market share and operate in a slow growing market.

Cash cows – are the most profitable brands and have high market share and low growth rate. They are largest income generator.

Question marks – Hold low market share and operate at fast growing markets – they demand big investments.

Stars – Operate in the most demanding markets and obtain highest market share. As such start are big income generator on one hand but also demand big investments.

Once a company's portfolio is evaluated according to Boston Matrix, the IP manager should start defining IP development in terms of commercialization strategy. This person should also elaborate on the risks connected to the company's assets and work towards taking action for IP protection and work to reduce the risks of infringements.



Source: adapted from Reeves et.al, 2020

2. Establishing a strategy

When deciding to include your IP assets in your business plan, the general IP strategy needs to be selected.

There are two distinct IP strategies (offensive – with the main goal to protect your IP assets and defensive – the main objective is to eliminate the risks of competitors exploiting your creations).

Another strategy is to seek **Freedom to Operate** possibilities. This is common in technology-intensive sectors. FTO entails analysing and ensuring one has the freedom to test, market, or sell a product in a specific geographical area.

3. Finding business partners

EU offers a network named EEN (Enterprise Europe Network) that manages the largest online database of business opportunities. They are equipped with a search tool, to enable **search for a partner** in business or academia to co-develop, manufacture, and distribute your product.

However, one important aspect needs to be taken into account – the co-development demands for high levels of respect and below listed components to properly function.



Components of collaboration

When discussing about open innovation and importance of collaboration in knowledge exchange between university/institute researchers and industry we are aware that in the centre of the relationships, there is respect.

Out of respect, the other components emerge, forming lively environment where good collaboration is possible.



When initiating new collaboration revise the possibility to implement a **non-disclosure-agreement**. An NDA is a legally binding contract setting the conditions under which one party discloses confidential information to another.

4. Know the local ecosystem

The local ecosystem is the system with distinct IP rules and specifications related to your business.

Even if the EU member states have agreed and harmonized the majority of rules, some differences remain between member states. If deciding to expand your business abroad, this needs to be taken into account.

5. Selecting the right business model

When deciding to commercialize your IP asset there are the following possibilities: **licensing**, or **franchising**, where IP holder permits a third party to use the IP asset; **spin-off** (in form of start-up), when the IP holder established own company to market the product developed. Spin off demands for start-up funds for further development and manufacturing of the product; **joint venture** where co-investor is sought to fund the development and marketization of the product.

Final option is **going online** with the business, if the nature permits. Potential customers can be reached fairly quickly with such an approach.

6. Make sure, your rights are enforced

The first step in making sure your rights are reinforced is to keep track and monitor the status of your IP assets. If you discover, third party (or your competitor) infringed your IP rights, you must be ready to enforce them.

Initially, you can address the infringers with **formal communication** explaining their actions and propose a solution. If such an approach gets ignored, civil actions are proposed.

Civil actions, however, require legal assistance. One needs to note, civil litigation procedures are governed by national laws.

Additionally, it is important to know, that measures are only valid if they refer to IPR registered in the respected country.

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