

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

## Technology Transfer and Open innovation

READING MATERIAL prepared for KNOWING HUB PROVIDERS training

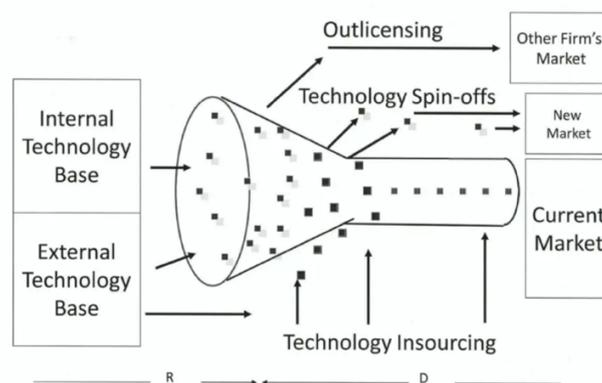
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# Living in a world of Open Innovation

“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 impact 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 is able to 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 in order 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 are able to be "commercialized by the company, business models are created, and capital investments are required to create growth. The real social impact of an 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 in order 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 to 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.

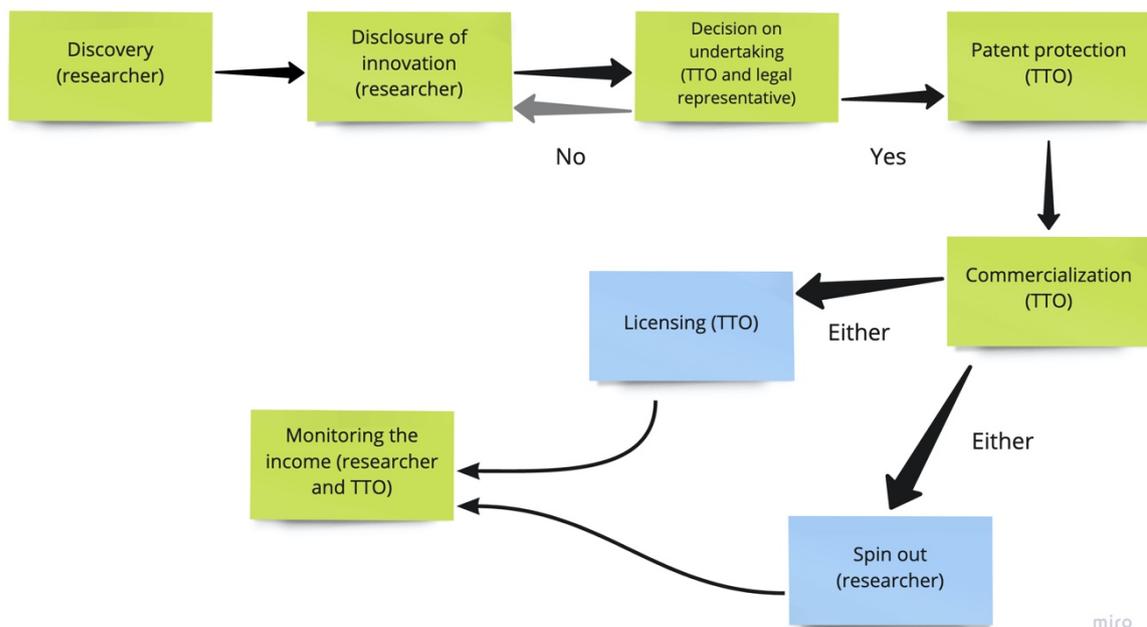
The fundamental steps of the technology transfer process are depicted in the figure below.

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 working prototype. In the second step, the researcher decided to disclose the innovation and he/she approaches the Technology Transfer officer for 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 undertaking is accepted. If innovation has market potential, the TTO files application for patent protection and decides on the commercialization of the patent. Commercialization can be done through two mechanisms, either through licensing or through spin out company. In both cases the monitoring of financial success is necessary. In 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 definitely 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.

### **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 basically 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.

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