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NoGAP

Knowledge Transfer Community to bridge the gap between research, innovation and business creation

Deliverable 2.9

Report on how to finance services for TTC – Business Plan Model

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Abbreviations

<i>CREST</i>	<i>Committee de la Recherche Scientifique & Technique</i>
D	Deliverable
DTC	Danube Transfer Centre
<i>e.g.</i>	<i>exempli gratia</i>
EaP	Eastern Partnership
EEN	Enterprise Europe Network
Eoi	Express of Interest
EPO	European Patent Organization
<i>etc.</i>	<i>et cetera</i>
EU	European Union
HR	Human Resources
I&TT	Innovation & Technology Transfer
IP	Intellectual Property
IPR	Intellectual Property Rights
R&D	Research & Development
SEZ	Steinbeis-Europa-Zentrum
SME	small and medium-sized company
SWOT	Strengths, Weaknesses, Opportunities, Threats
T	Task
TO	Technology Offer
TR	Technology Request
TT	Technology Transfer
TTC	Technology Transfer Centre
TTF	Technology Transfer Funds
UN	United Nations
WIPO	World Intellectual Property Organization
WP	Work Package

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1. Objective & Background of Deliverable

Technology Transfer Centres (TTCs) are working towards the aim of transferring research results towards market. Different legislation systems, political backgrounds, levels of existing collaboration of academia with industry impose different day to day issues that are being faced by the offices in different European countries. Cross-border technology transfer (TT) can be hindered by national differences. The Innovation Union flagship initiative of European Union (EU) underlines those mechanisms to strengthen TTCs in public research organizations should be developed, in particular through transnational collaboration. Unfortunately, these initiatives have a strong national character and fail to fulfil a common European strategy against the challenging global competition. The TTCs as well as their processes are very fragmented and diverse within Europe.

Against this background, Deliverable 2.9 (D2.9) tries to understand how to finance services for TTCs using a proper Business Plan Model. Thus, it is a report that proposes a manner of how to create, implement and, in particular, run a TTC in order to allow offering services in a sustainable way. It tries to examine possibilities for financing services for TTC and seeks to see how to overcome these issues using an exemplary Business Plan.

D2.9 is closely connected to other tasks of Work Package 2 (WP2) “Developing Innovation Support Services to foster Innovation Partnership in the societal challenge secure, clean and efficient energy”. In Eastern Partnership (EaP) countries, international as well as national partnership in the societal challenge secure, clean and efficient energy are still in an early stage, not to say almost non-existing. Thus, developing innovation support services to foster innovation partnership between the stakeholders is a primary goal for the NoGAP project. D2.9 is part of the activities in Task 2.3 (T2.3). This task aims at identifying opportunities for existing and eventually new TTC.

- In the framework of this task, a questionnaire was developed in a first step. It was applied to stakeholders in order to analyze the need, the capability and the ability for the implementation of TTCs EaP countries (D2.7).
- In the aftermath of D2.7, a report, based on the results of the questionnaire, will be produced by RCTT. This report will design the guidelines for creating future TTCs in EaP countries (D2.8).

Besides, D2.9 is strongly interdependent with the elaboration of D2.5 “Brochure related to financing issues in Technology transfer and Innovation”. This brochure should help stakeholders to understand financing issues in TT and to forecast the cash flow needed. The focus of D2.9 and D2.5 is thus a different one. On the contrast to the present deliverable, D2.5 focuses on questions of TT in general. D2.9 on the contrary concentrates on TTCs. In addition, the content of D2.9 is connected to D2.4 “Handbook / Business Plan in Innovation Environment”. D2.4 will help stakeholders to understand not only the importance of a properly prepared business plan but also the issues generated by mistakes and omissions, when starting a project, no matter of the nature (research or industry).

With this end in mind, the following document comprises three sections. Chapter 2 lists important steps, including funding options, for creating a TTC. Chapter 3 describes the Business Plan Model in order to understand how to finance services for TTCs. Chapter 4 recapitulates the main insights.

2. Creation of a TTC

The creation of a TTC is a challenge that requires meticulous considerations and preparations. In order to elaborate a reasonable idea of what it costs to found a TTC a plan that comprises all necessary steps is useful. The following steps of TTC creation do not intend to be exhaustive but present a useful framework for setting up a TTC:

- Step 1: Analysis of environment of TTC
- Step 2: Selection of staff for TTC
- Step 3: Financing of TTC creation
- Step 4: Founding document of TTC

2.1 Analysis of environment of TTC

In order to better understand and assess the potential of the **region** in which a TTC should operate, a general analysis of the area is indispensable. It is recommended to describe the following aspects: Political, economic, socio-cultural, technological, environmental, and legal factors. It is useful to categorize the collected information as strengths, weaknesses, opportunities and threats (SWOT) for a region.

In order to better understand and assess the potential of a certain **host organisation** within a region, a general analysis of this institution is indispensable. Given a university as host organization for instance, it is recommended to describe the following aspects:

- The university in brief (number of students, professors, employees...)
- The university's relationship with companies (What is the strategy of the university regarding demand driven research, the commercialization of research and its results, optional: relationship to other research institutes if relevant...)
- The university's professors (Do professors know the strategy of the university regarding demand driven research, the commercialization of research and its results, might also include other key persons from research teams and their attitudes/opinions...)

A TTC must try to understand the **needs of their target market**. When the TTC will be running, it should be self-sufficient thanks to its services offered (see section 3.4). A deep knowledge of customers' needs is consequently crucial to be successful. This is the reason why market analysis is indispensable.

2.2 Selection of staff for TTC

Results of various researchers indicate the importance for technology transfer professionals to possess soft and business skills as well as hard skills (Mom, Oshri and Volberda, 2012; CERT-TTT-M Consortium, 2008; ETTM, 2008):

- Soft & business skills: Communication & networking, negotiation, project management, technology commercialization, and new business development;
- Hard skills: Intellectual Property Rights (IPR) and licensing and domain-specific knowledge.

2.3 Financing of creation of TTC

Figure 1 depicts the estimated costs that incur when establishing and running the first year of a TTC.

Activities ¹	Costs (Approximate)	<i>Incl. Personal Costs</i>
Analysis (Analysis of environment, host university, and demand)	11.500 €	10.000 €
Establishment of TTC and integration in networks (preparations for founding documents...)	24.500 €	21.500 €
Networking	18.000 €	15.000 €
Operational (HR, Meetings, possibly trainings...)	32.750 €	26.000 €
All activities	86.750 €	72.500 €

Figure 1: Costs for setting up a TTC

Based upon this calculation, it is recommended to consider different funding modes. In general, there are several possibilities for getting seed money for a TTC creation. The decision for one or several types of funding depends on the framework conditions in which the TTC operates.

- **National public funds:** TTCs can apply for public money to finance and to coach start-ups lead and managed by previous scientist. Such start-ups can function as a TTC. In post-socialist countries (new member countries), costs for setting up a TTC usually come from national support system and/or specific EU projects. Then the problems of creating profit occur (it is not allowed to make a commercial profit five years after using the project money).
- **International funds:** international funds can serve as seed money for starting a TTC. For example, SEZ is partner in the FP7 project “Danube-INCO.NET”. The project is an EU funded project and intends to support the policy dialogue within the EUSDR. In this endeavour, one partner from SEZ’s “Danube Transfer Centre” (DTC) project is also member in the project consortium: Eko-Sustav in Vukovar (Croatia). Danube-INCO.NET allows the financing of a TTC/DTC in Vukovar, which has not been clear during the pilot phase of the DTC project.
- **Venture capital:** this is not the major investment tool for TT - it joins a business creation project at a rather late stage of development, when high investments are needed to finance growth and high market penetrations. Nevertheless, it is a possibility for financing the creation of a TTC.

2.4 Founding document of TTC

In order to create a TTC on a sound footing, the most suitable legal framework must be identified in each case. This is the most important step – the Agricultural University of Nitra for instance is going to set up a university spin-off. Yet, a founding document seems to be recommended in all cases. The final founding document states at least a definition of the TTC’s goals (Its interests must not be opposed to those of the host) and the names of the persons responsible as well as their signatures (nomination of TTC managers).

Three steps are needed in advance in order to be able to found a TTC:

1. Letter of Intent → 2. Letter of Commitment → 3. Memorandum of Understanding

¹ The set-up and implementation of a TTC can differ in time. These calculations are based on SEZ’s experience in the Danube Transfer Center project mentioned at the beginning of this text.

The steps mentioned above help to elaborate a reasonable business plan which comprises all necessary elements for creating a successful TTC. All together, these steps are the building block of the concept for TTC creation. Yet, this concept is constantly evolving. New experiences which could be gained must be integrated into the concept and new obstacles identified in practice ask for new answers. In order to be always up-to-date, this document therefore requires constantly input from new practical experience. Only such feedback loops can ensure that a tool-kit can help practitioners to create TTCs successfully.

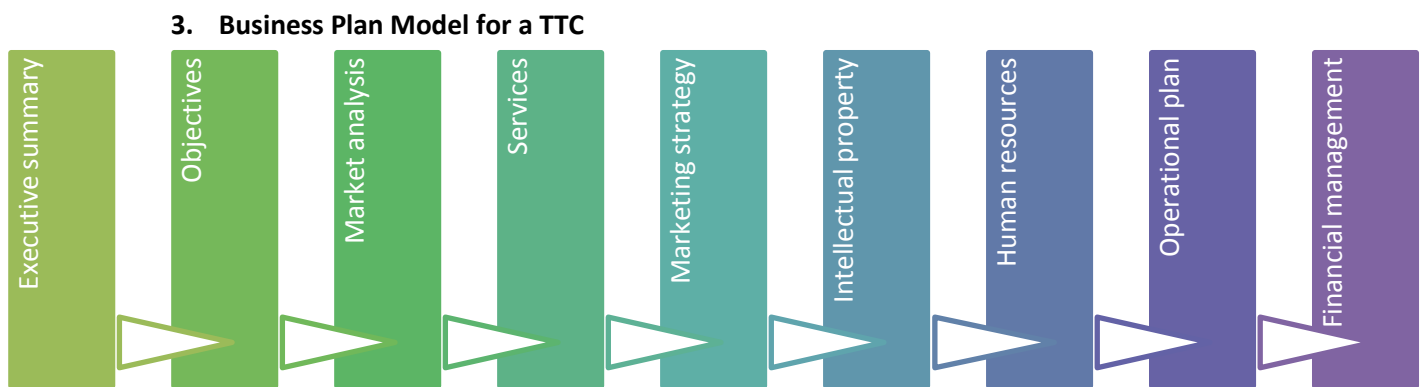


Figure 2: Elements of a Business Plan Model

3.1 Executive summary

The Business plan of a TTC represents an essential component which does not serve only for internal use but also for external use. Initially it allows to structure the ideas, thoughts and actions and to analyze the key elements necessary for a successful business. Later, it is also a communication tool describing the business concept to others and substantially contributes to the understanding of how to fund a running TTC. When the TTC has been implemented, feedback loops ensure that the centre is constantly adapting to its environment. Such adjustment processes require also ever evolving funding sources. In order to understand how to finance services for TTC, a Business Plan Model is required.

3.2 Objectives

TTCs intend to help SMEs to make the most of the business opportunities in the countries of EaP. When SMEs do not know where to start when looking for international partners, when they do not have the resources to apply for EU funding, when they have no idea who could finance their business, TTCs can help. Such centres want to make sure that companies benefit from the EU Single Market and of EaP countries as much as the big players do. TTCs can support SMEs in finding international business partners, by sourcing new technologies and receiving EU funding or finance. And they can advise SMEs on issues as diverse as intellectual property, going international, or EU law and standards. As such, TTC function as a one-stop shop for all your business needs. They bring partners from business and research together - across countries' frontiers.

TTCs are working towards transferring research results towards the market. This is their basic *raison d'être*. Resulting from this overall objective, TTCs have in general three main objectives:

- First of all, they try to support the competitiveness of companies through new product development in collaboration with universities and/or Research & Development (R&D) organizations. They are organized as “one-stop-shops” mainly for small and medium sized enterprises (SMEs) with regard to Innovation & Technology Transfer (I&TT) and installed mainly at universities and research organizations and will have one common approach and strategy.
- Secondly, TTCs intend to promote the cooperation between universities and companies in Danube region by bridging the gap between research and innovation. Their mission is to link industry and research.
- Finally, they try to foster the knowledge exchange in an inter-regional network. TTCs can be regional hosts for common projects regarding I&TT. They can coordinate and create synergies and links between existing TT activities in the EaP area and build a transnational network of TTCs in order to ensure the involvement of international experts at any stage.

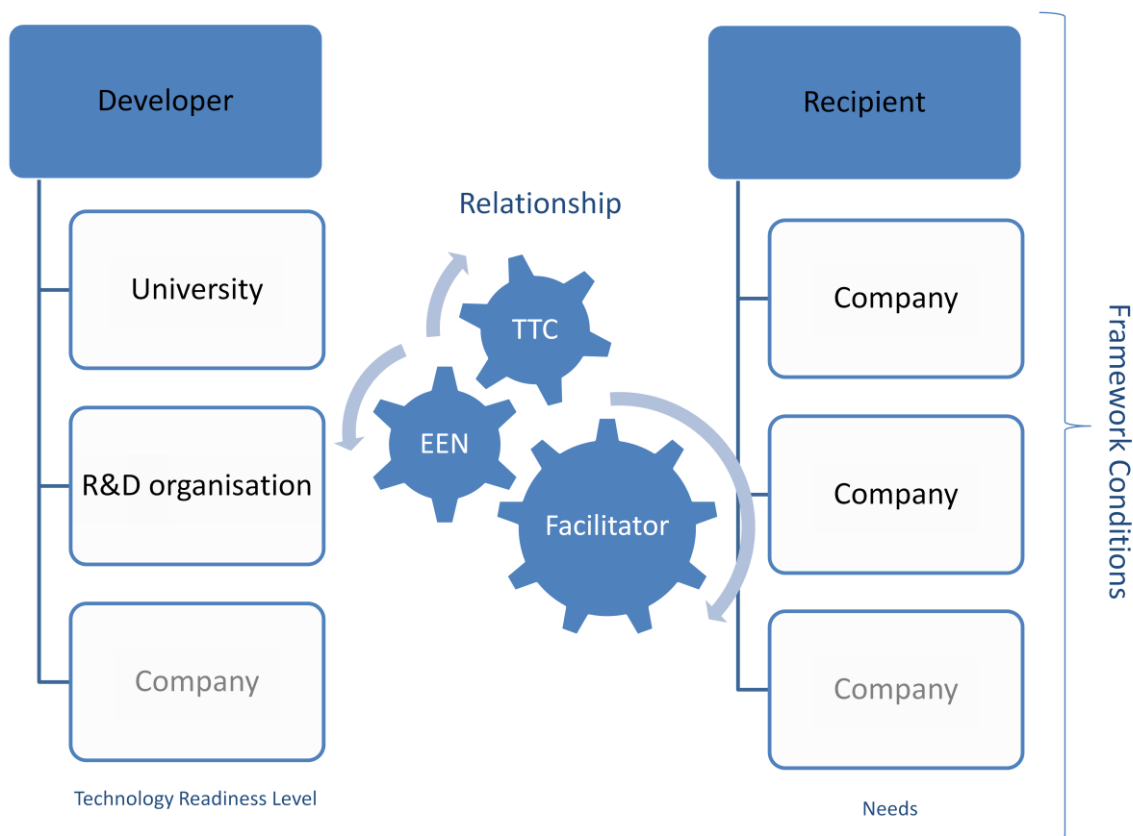


Figure 3: The role of TTCs in TT

All kind of adjustment processes should have these three priorities in mind in order to adhere to the fundamental *raison d'être* of a TTC.

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3.3 Market Analysis

A TTC must not only in the beginning understand its market. It should constantly observe external dynamics in order to adjust internal process and services. It is recommended to take into considerations the following five forces of the external environment:

- **Customers:** understanding the needs of buyers of TTC services is crucial. Therefore a close contact to SMEs, research institutes and universities must be established.
- **New entrants:** If a TTC is successful, new entities will try to copy the business model. This threat is ever existent as especially privately held organizations may always have in interest to increase profits.
- **Competitors:** Attention must be paid to competitors such as TTC from other institutes of higher education, federal laboratories active in TT or private organizations in this domain. Competitors to a TTC can be from national origin or from abroad.
- **Substitutes:** Sometimes, TTC have problems with being distinctive. Offering different even unique services might be difficult, in particular at the beginning. To some customers, it might seem that chambers of commerce offer similar services. In order to differ from these competitors, TTCs must carefully analyze competitors' services and define their own.
- **Suppliers:** a TTC should analyze its dependencies upon other organisations. For example, it needs the staff from university to conduct its studies. A good working relationship with such a supplier is therefore indispensable.

3.4 Services

The range of services of TTCs is manifold. Examples of relevant **services for external customers:**

- **Company profiles:** TTC staff members can create company profiles and publish the profile of an SME on the TTC's database for distribution. If the TTC is member of the Enterprise Europe Network (EEN), it can upload the company profile there for dissemination throughout Europe and abroad. In addition, a TTC can support SMEs through the partnership process.
- **Identification of technology needs from the industry and especially SMEs:** in the context of the creation of company profiles, TTCs can identify the needs of these organizations. By means of an innovation audit, a TTC can analyze the innovation performance of companies with the aim to introduce changes or improvements when required. At the corporate level, an innovation audit is used to evaluate technological capacities, procedures, and technology needs of companies. Furthermore, it can help companies to identify and assess their strengths and weaknesses and to envisage concrete measures in an action plan. An innovation audit can support decision-makers by improving the understanding of issues relevant for their company such as competitiveness, innovation, research, technological capacity, and organizational change, etc. To do so, a profile of innovation is developed and appropriate indicators and benchmarks are identified.
- **Expressions of interest (Eoi):** companies interested in the profile of another company in this database can express their interest and the TTC can connect these two parties. Any feedback will be forwarded to and contact details provided. Then SME has the possibility to decide on the further steps with regard to the profile of the companies interested in (email, phone or personal meetings).

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- **Technology Offer (TO):** TTCs can write a Technology Offer for the EEN if their client develops a technology or an innovation and wishes to make it available to end-users abroad in order to carry out a technology transfer. A TO for EEN can be submitted in a special software called MERLIN. An of how a TTC can help a customer to align its TO according to MERLIN guidelines is given in the following:
 - o Keep in mind the target group of your TO
 - o Avoid complicated or scientific knowledge
 - o Use a simple structure for your sentences
 - o Delete unnecessary information
 - o Use a clear and simple title for your TO
 - o Do not simply copy and paste
 - o Explain acronyms
 - o Read your TO before
 - o Write the Summary last
 - o Put your emphasis on the technology offered and explain it clearly
 - o TOs should be written in the third person
- **Technology Request (TR):** Likewise, TTCs can write a TR for a company if their client needs to find one or several partner(s) who will transfer the technology or know-how needed to solve a problem they have encountered. Consequently, with the means of TR, TTC help to identify of partners for collaboration (on regional, national and European level)
- **Internationalization:** TTCs can help SMEs to find suitable partners abroad.
- **IPR consultancy:** When SMEs are interested in commercialising a new idea, product, service or process, a TTC may help to work out how to protect and make the most of the firm's ideas and technologies. TTCs can also put you in touch with the right organisations and intellectual property (IP) experts – saving you time and money. The TTC's network provides information and advice on IP. They may work closely with specialist organizations that help small businesses to use IPR to protect and profit from their ideas and innovation. In this context, they can provide assistance for compliance with European legislation, standards, norms, accreditations.
- **Company visits including innovation audit:** TTCs may conduct innovation audits in companies. The outcome of such an audit should be a clear identification of obstacles of innovation. Such an analysis can significantly improve the culture and process of innovation within your business. As a consequence, TTC support may lead to an ability to implement fresh ideas to generate revenue or reduce cost for example. An exemplary and rough guideline for company visits can be found in the following. A TTC can provide the comprehensive expertise how do conduct such a company visit:
 - o Preparation for the meeting (What should I take with me? Where to meet? Etc.)
 - o Course of the conversation (Stage 1: Introduction and general presentation, Stage 2: Identify the need, Stage 3: Proposal of a solution / offer of service)
 - o Producing the minutes of the meeting (General information about the company, Outcomes of the visit, Analysis, Assessment of the funds to be raised, Follow-up)

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- Follow-up for the customer (Send the following by e-mail no later than 2 days after the conversation, Make Customer Relationship Management (CRM) entries, Follow up again approx. 3 weeks after the conversation, Complete an innovation or euro-management audit)
- Taking account of organizational cultures (Geert Hofstede, 1983, etc.)
- **Trainings:** TTCs can offer trainings of (scientific and economic) stakeholders in regard of innovation (strategies and management), TT (strategic partnerships and management) and project management (building of consortia, writing of proposals, e.g. for SME Instrument in Horizon 2020, administrative and financial project management).
- **Technology Watch:**
 - Providing new information on long-term developments, global trends, and on competitive advantages or disadvantages in comparison to other business/ industry sectors, technologies and environments.
 - Analysis of needs and competences in the field of RTDI.
 - Database survey on patents, emergence of new scientific breakthroughs or industrial developments reported in scientific journals or dedicated databases.

In addition to services for external customers, TTC may also offer **services for internal customers** (host organization):

- **Hosting of specific research programs:** TTC may host specific research programs for their home university, e.g. national/cross-border science initiatives, innovation/transfer vouchers etc. financed by national/European (e.g. European Social/European Regional Development) funds.
- **Identification of TOs from the universities:** TTC can link their host university with business contacts.
- **Counselling and assistance for business, investment, and/or marketing plans:** In the same respect, TTCs can offer counselling and assistance for business plans, investment plans, marketing plans to their host universities.
- Stimulation of entrepreneurship (business plan contests, business incubator for students/young graduates. Examples of stimulation of entrepreneurship:
 - Horizon 2020 call “MG.9.7-2014 Innovation awards for students and researchers in the context of the Transport Research Arena conference - TRA 2016”.
 - Framework Programme 7 project „NoGAP- Bridging the gap between research, innovation and business“.
- **Trainings:** TTCs can offer trainings of (scientific and economic) stakeholders in regard of innovation (strategies and management), TT (strategic partnerships and management) and project management (building of consortia, writing of proposals, administrative and financial project management).

3.5 Marketing strategy

TTC must promote and sell the services mentioned above. Different options are possible:

- **Presentation material**, e.g. flyers, must be elaborated by TTC in the national language as well as a *franca lingua* such as English or Russian.

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- **Mailing actions:** TTC can inform selected (national) enterprises a) about establishment of TTC and b) about possibilities to collaborate in general. A newsletter will be elaborated and disseminated regularly in order to create significant awareness. Selection of companies has to be done according experiences and existing relationships of TTC director/manager. Additionally existing links to other TTC and networks should be used. Members of this network are to be informed about TTC and its services. It is necessary also to avoid any conflict of interest with other transfer units of the host university.
- **Internet:** TTC with one major focus on sector IT has to be presented in internet in a proper way. It is highly recommended to establish a website that allows potential customers to find TTC and to learn about its service offer. An example can be found for the DTC in Cluj-Napoca: <http://www.muri.utcluj.ro/DTC/>.
- **Events/exhibitions/conferences:** normally, host universities participate in exhibitions and conferences. This allows TTCs to promote services and to get in touch with potential customers. Without being legal entity and without separate budget for participating as exhibitor, TTC must ask for strong support from the host university in order to be invited to join their official presentation as much as possible. A basic agreement with the host university is recommended while it is necessary to involve other transfer units of the host university in such actions.

3.6 Intellectual property

TTCs are working at the interface of research and business. This is why staff members of TTCs should have certain **competences** in the field of IPR. They should have introductory knowledge on legal issues related to research in general, introductory knowledge of basic agreement (license, funding and collaboration agreements, evaluation agreements...), understanding of commercial strategies related to the above mentioned agreements, and a basic understanding and use of patent-databases. These elements allow staff members to have a reasonable insight into IPR, licensing and legislation and all practical and commercial implications of legal issues concerning TT.

There are various types of **instruments** that may be considered by TTC staff members for protecting IP. Depending of the nature of the IP to be protected and of the objectives of the IP owner, the IP protection instruments can be the following:

- **Patents:** A patent is an exclusive right granted for an invention, which is a product or a process that provides a new way of doing something, or offers a new technical solution to a problem. The protection is granted for a limited period, usually 20 years (as stipulated in the TRIPS agreement). The patent is a title of ownership. Patent protection means that the invention cannot be made, used, distributed or sold on a commercial scale without the patent owner's consent. These patent rights are usually enforced in a court, which in most systems holds the authority to stop patent infringement. On registration and the grant of rights, annual fees are charged by the relevant authorities to maintain them. A patent does not give its owner the positive right to use the patented invention. Third parties may have to be requested. The patent owner may give permission to other parties, or license them, to use the invention on mutually agreed terms.

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- **Utility models:** In general terms, a utility model is an invention that does not meet all the requirements of patentability but has an industrial use. The inclusion of utility models into the intellectual property system in some countries has the primary objective of nurturing the rapid evolution of indigenous innovativeness, particularly in small and medium-scale enterprises and among private persons.
- **Trade secrets:** Trade secrets consist of confidential data, information or compilations used in research, business, commerce or industry. Universities and R&D institutions, government agencies, business entities and individuals may own and use trade secrets. The information may include confidential scientific and technical data as well as commercial or financial information not publicly known that is useful to an enterprise and confers competitive advantage on one having a right to use it. The secrecy of the information must be maintained to conserve its trade secret status.
- **Copyright** (in literary works): Copyright is a legal term describing rights given to creators for their literary and artistic works. The kinds of work covered by copyright include literary works, such as novels, poems, plays, reference works, newspapers, computer programs, databases, films, musical compositions and choreography, artistic works such as paintings, drawings, photographs and sculpture, architectural works, advertisements, maps and technical drawings. The creators of original works protected by copyright, and their heirs, have certain basic rights. They have the exclusive right to use or authorize others to use the work on agreed terms. They can prohibit or authorize:
 - o its reproduction in various forms, including printed publication or sound recording;
 - o its public performance, as in the case of a play or musical work;
 - o its recording, for example on compact disc, cassette, or videotape;
 - o its broadcasting, whether by radio, cable or satellite;
 - o its translation into other languages, or its adaptation, such as that of a novel into a screenplay.

Further instruments of IP protection are: Industrial designs, geographical indications, trade and service marks, new plant varieties.

In the context of cooperation between international stakeholders, special attention has to be paid to the corresponding national IP **regulation**. These can differ considerably depending on the geographical allocation of e.g. a patent. It is important to take into account differences in IP regulations between national legal systems, which may affect the knowledge transfer and IP management in an international collaborative project. National import/export regulations may play a role when a technology or other IP is to be brought into a foreign country. In the following, we present some useful sources of information and facts on national laws and treaties in the context of IP:

1. **Word Intellectual Property Organization (WIPO):** WIPO is a United Nations (UN) specialized agency dedicated to foster the rights on immaterial goods and facilitating knowledge transfer by providing services, supporting the development of legal frameworks, building infrastructure for knowledge sharing: <http://www.wipo.int>

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2. **European Patent Organization (EPO):** Detailed information on the national procedures, mechanisms and regulations can be found with the respective patent agencies such as EPO, the Japan Patent Office or the United States Patent and Trademark Office to name only a few: www.epo.org, www.jpo.go.jp, www.uspto.gov.
3. **Committee de la Recherche Scientifique & Technique (CREST):** Another very useful source is the report of the CREST IP working group, who addressed perceived difficulties in setting up cross-border collaborations. One part of the report provides national factsheets on specific national IP regulations: http://ec.europa.eu/invest-in-research/pdf/download_en/crestreport.pdf
4. **IPR helpdesk:** A former EC project gave rise to a platform for IPR issues – the IPR Helpdesk. Amongst the services provided are regularly an updated news section and library (fact sheet, studies, etc.), trainings, tutorials, seminars and a helpline. Also, special aspects of IP management within the projects of the FP7 program are addressed. <http://www.ipr-helpdesk.org/home>.

3.7 Human Resources

TTC start with minimum efforts regarding human resources input. Yet, the role of a chief manager is crucial. Being **TTC manager** is a complex and demanding as he or she has to understand and work with both researchers and business people. Such a person should have the following attributes (see section 2.5):

- **Access to professors and university:** It is important that the chief manager of the TTC is a very communicative and active person having close connection to the management of the host organization.
- **Networking with regional cluster activities:** Beside his or her relationships to the host management, the chief manager must also be on good contact with the regional cluster activities. This allows identifying more easily suitable partners for business cooperation. In this context, regional government (in terms of coordination of the activities within the context of regional smart specialization strategy) might also be of importance.
- **Marketing skills:** above all at the beginning of the TTC it is decisive that the chief manager knows how to make the TTC popular. Possible customers, clusters, universities and political persons must know about it so that they themselves can recommend it.
- **Technical knowledge:** in many cases, technical knowledge of a certain field is asked in order to be able to evaluate business ideas.
- **Access to companies (entrepreneurial spirit):** ideally speaking, the chief manager of the TTC knows how companies and entrepreneurs are thinking and what their efforts are directed at.

In addition to the TTC manager, other experts or professors do not have to be involved as permanent co-workers or partners when institutional funding for a TTC is not available. In such a case, TTC management has to identify professors of the host organization that understand collaboration with TTC as a chance to develop their individual transfer business. They should be ready to invest in promoting this business on their own according agreed procedures of TTC. Like this, TTC will become a strong unit within the host organization and multiplies efforts to become known on the market. This expansion

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sion allows being recognized and accepted in the respective host organization. Professors of the host organization who show interest to join the TTC will have to work according the established “Code of Conduct”. The TTC management is responsible for selection of additional professors and ensure that they work in line with TTC methodologies of doing technology transfer.

In addition to the TTC manager, **staff members** have to be competent in order to fulfil TTC objectives. The first step of the qualification of TTC staff is the identification of skills & competences needed. TT is said to be a talent-based business as it is often difficult to find people speaking both the language of academia and industry. Experience has shown that especially for researchers, it is important that they can trust this person (Krattiger, et al, 2007). Indeed, practical experience shows that TT practitioners must have a wide range of capabilities. Results of various researchers indicate the importance for technology transfer professionals to possess soft and business skills as well as hard skills. There are seven in total which are said to be crucial (Mom, Oshri and Volberda, 2012; CERT-TTT-M Consortium, 2008; ETTM, 2008):

- **Soft & business skills**

- Communication & networking: theoretical knowledge about communication theories, networks for TT and English language is crucial. These skills allow to speak in public, valorise and present ideas, to coordinate a team, manage a meeting or workshop, to solve conflicts, advise staff, to understand external communication issues and last but not least to develop stable relations with stakeholders. Comprehensive information on the topic of communication, including theoretical foundations and practical application, can be found at the website of the International Communication Association: <http://www.icahdq.org/>.
- Negotiation: theoretical knowledge about communication and negotiation theory. This knowledge is fundamental to identify the process and content in negotiations, to recognize different styles in negotiations, to understand cultural and individual aspects in such situations, to identify key factors to success and to merge expectations of both researchers and companies.²
- Project management: theoretical knowledge about operational and strategic planning and marketing questions. This helps to define an assignment and results in a project, to plan different project phases, control the different project factors (time, budget, quality, information...), to write a project plan and to do a risk analysis.
- Technology commercialization: theoretical knowledge about legal issues of commercialization, market assessment and technology marketing is useful. It allows to analyze a market and competitive technologies to determine the commercial potential of an idea and its viability, to conduct a market segmentation and to push a technology far enough to get pulled by the market.
- New business development: theoretical knowledge about development of business plans and evaluation methodologies, general management notions and foundations of economics is useful. It helps in practice to elaborate business plans for a new company/product, find potential commercial partners or investors and to promote ambitions of entrepreneurship in general.

² Comprehensive information on the topic of negotiation, including theoretical foundations, practical application and further sources, can be found in the article of Alfredson and Cungu (2008).

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- **Hard skills**

- IPR and licensing: theoretical knowledge about IPR legislation, patenting process, types of IPR Agreements is useful. This knowledge helps in practice to assess the best protection possibility for a certain innovation, to design an IP strategy, within a given budget or write an IPR Agreement.
- Domain-specific knowledge: it is helpful if the TTC staff has an academic background as this allows him or her to be expert in certain issues such as health, environment, energy etc. Information gathering & analysis is decisive in this context. A professional in TT should have theoretical knowledge about patent, company and journal databases to be updated.

There are various possibilities to train the staff of a TTC to make them acquire the needed competences. Important **qualification measures** are listed in the following.

- Staff exchanges between new TTCs and established TTCs.
- Twinnings between new TTCs and established TTCs.
- Coaching and mentoring between new TTCs and established TTCs.
- Online platforms and tools, massive open online courses.
- Trainings in specific thematic areas (e.g. acquisition of clients, innovation auditing, conception of projects, proposal writing, centre management etc.).

3.8 Operational plan

The **legal framework** conditions under in which a TTC might operate can be different across countries. Technology Transfer can be done by a TTC according to the Steinbeis model in Germany. Nevertheless it is necessary to adapt the methodology of operational work to the available competences and capacities of the respective TTC. Despite possible divergences, a TTC should be in general a legal entity which is hosted by another organization such as a university. This host university is experienced in technology transfer and applies several models of university-enterprise collaboration. For instance, the business model of the TTC in Bratislava (Slovakia) for example is in line with EUSDR but does not interfere with existing university transfer methods and pathways of its host university. As a consequence, there is a contractual relationship between the TTC and its host organization. There are employment contracts between the TTC and its staff or representatives. These individuals can sign contracts in the name of the TTC with customers such as SMEs. This creates a contractual relationship between the TTC and the customer. Each professor's connection to the TTC can be regulated by a manager contract which is concluded with him. As these contracts have to take into considerations international differences in law, there are no templates for it. In this contract, the rights and obligations arising from the independent project management must be defined. In addition, it is recommended that only the TTC organization, not the TTC manager, can be held responsible. The legal functioning of TTC is explained in Figure 4.

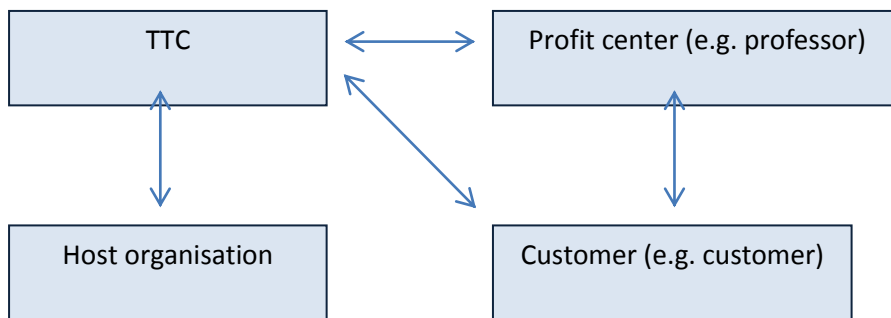


Figure 4: Legal functioning of TTC activity

When new organizations wish to join an already existing TTC, several modes are possible for TTC **extension**. The first option is a model consists of a newly founded entity as TTC. This option has not been made use of up to now. The second possibility is a TTC founded in a university. An example can be found in Nitra where a TTC at the Agricultural University exists. The third option is a model with national/regional entry points could be adopted (using already existing centres, where such exist, and creating new ones where they are missing); office centres could be created as to provide territorial coverage. In the case of the TTC in Cluj-Napoca is located at Technical University of Cluj and had been founded together with Babes-Bolyai University in Cluj-Napoca. Two more universities have joined the already existing TTC afterwards: the University for Agricultural and Veterinary Sciences and *Iuliu Hatieganu* University for Medicine and Pharmacy in Cluj-Napoca. The new parties sign a so-called "extended cooperation protocol" with the existing partners. In addition, certain representatives of the newly added organization identify a person specifically for the contact with the TTC in order to ensure efficient information and communication flow can ("New member offices"). The proposed development scheme is found in the figure 5.

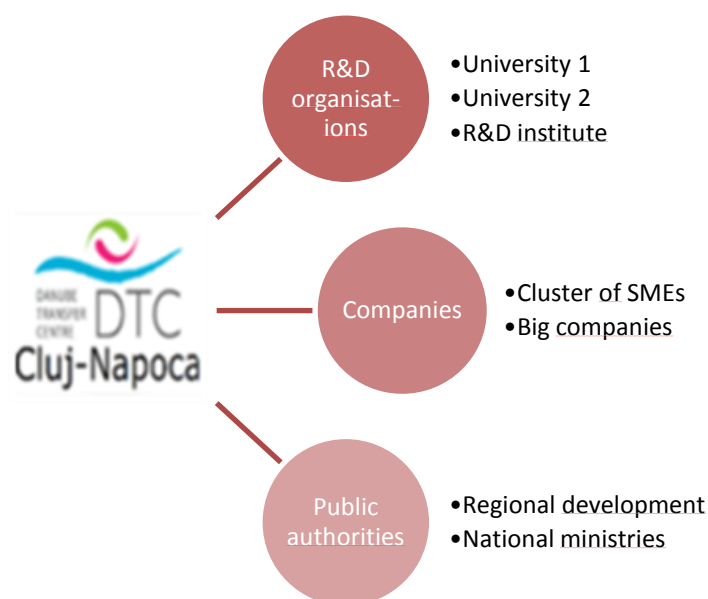


Figure 5: TTCs as entry points (e.g. DTC Cluj-Napoca)

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3.9 Financial management of a TTC

3.9.1 Managerial finance

- **Performance measurement:** The manager of a TTC can provide solutions based on the rules of the private sector and will manage the resulting projects on behalf of the TTC network, the regional hosting organisation being liable in external relations. The TTC managers have to provide a balanced annual turnover. Moreover, in the framework of the internal contractual conditions for TTC manager, they can decide on their own on receipts and expenditures (including fees, salaries, and investments) as well as on prices. Besides, SEZ has already established reporting standards for TTC managers. TTC managers asked to regularly report the
 - o Number of audits,
 - o Company visits,
 - o Technology offers or requests and trainings done.

On the one hand, these activities indicate the demand from SMEs, on the other hand, they show the ability of TTCs to respond to this demand. In total, these indicators can serve as performance measurement standards for TTCs.
- **Mode of payment:** Employees in the TTC are partly acting on the basis of a project manager contract³ which does not necessarily include an employment relationship (but can) and which may foresee remuneration exclusively on a fee basis (in such a case, the project manager is working as a freelancer in the TTC). Furthermore, there is the possibility of permanent employment of staff. In this case, the TTC manager is often directly employed by the university. Each TTC can have its own bank account or subaccounts, of which the TTC manager and the manager of the regional TTC may dispose. The TTCs can pay a certain percentage of all their receipts as a so-called network fee to the regional TTC. The network fees can be used to cover, among other things, the costs of the centralised services related to the specific TTC.
- **Cost calculation:** The financial management of a TTC is a challenge. An example for creating a TTC can be found in section 2.6. A TTC should definitely bear in mind the following costs:
 - a. Material: e.g. computers for TTC staff, training documents for participants.
 - b. Labour: e.g. consultancies – 500-1.000 Euro/day.
 - c. Travel: e.g. trainings, staff exchange or meetings - plane, hotel, subsistence.
 - d. Overheads: e.g. rent, electricity etc. for TTC office.
- **Pricing:** is a very complex and sensitive issue in marketing and business in general. Thus, a careful consideration of all factors of pricing in a service business, such as TTCs are, is indispensable. Based on the assumption that you want your TTC to be profitable, the following factors should be considered (shown in Figure 6):
 - o Costs: A TTC must first determine the cost of providing a service, and then add an additional amount to represent the desired profit. A TTC should definitely bear in mind the costs mentioned above, especially when applying cost-plus pricing methods. Assuming the usual Steinbeis rate of 9% of project budget, a TTC must attain a project income of “monthly costs: 9 x 100” to cover fixed costs per month.

³ It is not useful to develop a template for a manager contract as there are considerable differences regarding the legal regulation of contracts.

- Competitors: Another method of pricing consists of aligning pricing to competitors' prices. In either case, A TTC need to be aware of the prices of organizations offering the same or similar services in the marketplace, for example Chambers of Commerce and Industry. It might be also possible, in the case of a TTC, that there are no organizations offering similar services. Than this approach is negligible.
- Customers: Finally, a TTC can base its pricing decision on the perceived value of a service to the customer. A very useful method for assessing the willingness to pay is the conjoint analysis. Such an analysis requires potential customers to make a series of trade-offs. Analysis of these trade-offs will reveal the relative importance of component attributes and thus help to find the suitable price. Even when not using such sophisticated methods and go for cost-plus-pricing, a TTC must at least try to understand a little bit how much a customer is willing to pay for a service. This may not be how much time TTC staff has spent providing the service, but ultimately what the perceived value of that service and your expertise is to the customer.

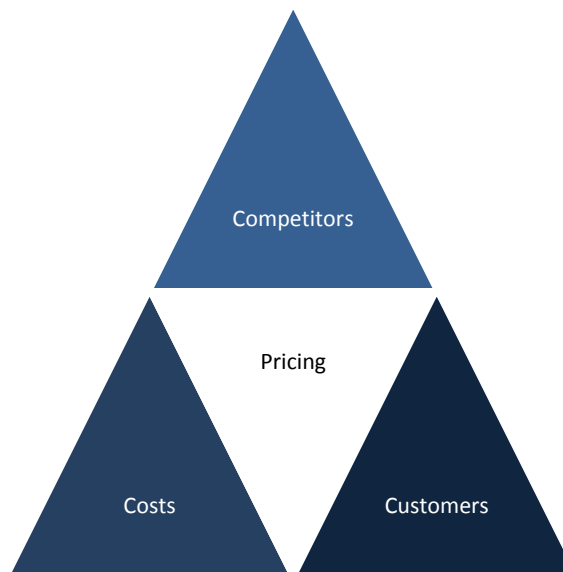


Figure 6: Factors influencing pricing

3.9.2 TTC Funding

The long-term aspiration of a newly created TTC should be definitively be self-sufficiency. Therefore several options for financing the running entity must be considered. Some of them are the same as for creating TTCs (see section 2.3):

- **In-kind-contribution from host university:** A TTC might finance some of its expenditures with the help of its host university. For example, the TTC in Nitra (Slovakia) is established and operated thanks to the in-kind-contribution of the Slovak University of Agriculture. This option is closely linked to the legal functioning of TTC, which is explained in the section “Operational planning”. Though, experience from the TTC project shows that this investment should gradually be replaced by externally financed projects.

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- **TTC services:** Following the model of the Steinbeis network, the financing of TTC should base on orders from the business sector. The business environment in a country can allow self-financing within next few month after the proper establishment of TTC. Companies receive services from the TTC and reward them according to the budget set at the beginning of the project. A TTC must try to understand the needs of their target audience: SMEs. Yet, a basic idea of what may be useful to offer as a service in general, can be found in the section „Services“. Additionally, according to the STW model, the joint work has to be in the same pace with the economy. Companies receive services from the TTC and reward them according to the budget set at the beginning of the project.
- **International funds:** Participation in international programs is often based on calls and tenders. For instance, TTCs can submit proposals for calls in Horizon 2020. This is the EU funding program for research and innovation with almost €80 billion of funding available in the period 2014 – 2020. It consists of particular sections, including the so-called “Societal Challenges”. This program section includes numerous calls in the societal challenge secure, clean and efficient energy. It is split into the focus areas aimed at energy efficiency, low carbon technologies and smart cities and communities. TTC can participate in such support programs as representative of the host university. Due to the legal status of the TTC, it might be possible that neither project-based funding nor institutional support is directly attributable to the TTC. Then the funding is often allocated to the host universities as the direct compensation of the projects goes to the involved university. Following the Steinbeis-Model, a TTC can obtain a commission from the project budget, which is equivalent the internal Steinbeis fee. Forwarding such funds from receiving universities to TTC must be discussed and agreed in time. Therefore an agreement with the involved universities is recommended. The fee from research projects or other corporate projects must be fully available to the TTC. Proceeds from this fee are used either to gradually reduce the investment of host university of the TTC. Assistance in the identification of national and international programs can be offered by more experienced TTCs. Link: <http://ec.europa.eu/programmes/horizon2020/>. In the field of energy, Horizon 2020 includes also other instruments:
 - Intelligent Energy Europe – This program of 2007-2013 which was aimed at helping the cities and regions to implement investment projects in the areas of energy efficiency, RES and sustainable urban transport has been transformed into Horizon 2020.
 - JESSICA – Joint European Support for Sustainable Investment in City Areas. It is the EC initiative developed in cooperation with the European Investment Bank (EIB) and the Council of Europe Development Bank. JESSICA promotes sustainable urban development by supporting projects in various areas, including urban infrastructures aimed at energy and energy efficiency.
Link: http://ec.europa.eu/regional_policy/the_funds/instruments/jessica_en.cfm

Moreover, public and bottom-up programs and funds like the European Investment bank play an important role for the technology transfer funding. An example is available online at: http://www.eif.org/what_we_do/equity/technology_transfer/.
- **TT funds:** There is not one proven way how to use Technology Transfer Funds (TTFs). Furthermore, an exchange among these offices – or between TTCs and TTFs – does not exist in an efficient way. One problem is that investments from the public side mainly go into fundamental re-

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search, what is on one side necessary to maintain excellence, but on the other side not sufficient to foster innovation. In the case of key enabling technologies, the relevant high level group states that Europe is on the same level as US or Asia in regard to good in knowledge creation / patents, but is lagging behind in regard to adopting this knowledge in products and services – which finally is necessary to create the return of investment in research. Basic research brings knowledge, but technological development with market orientation is a different thing and a different culture of working, as it needs cooperation models between research and industry, especially SME. It needs trust-building and it often needs incentives – which could come through dedicated policy instruments for innovation in SME. Applied research is one of the solutions, which can be shown very well in European regions such as Baden-Württemberg where a lot of public investment goes into applied re-search institutes, which deliver applications of new technologies for specific industry sectors. In Europe, public and private research organizations, which specialize in applied research through contract research. In supplement to typical risk capital or venture funds managed by banks, business angels or capital investment entities, it is worth considering and analyzing TT funds introduced and managed by research organizations themselves but not universities. One important tasks is the support for scientist willing to change to enterprises or even ready to define their own and new business (start-ups). In Germany all major research organizations offer and manage such funds e.g. Max-Planck-, Helmholtz-, Leibniz-Society or Fraunhofer.

- https://www.helmholtz.de/forschung/technologietransfer/foerderinstrumente/helmholtz_v_alidierungsfonds/
- <http://www.leibniz-gemeinschaft.de/transfer/transferportal/>
- <http://www.max-planck-innovation.de/de/technologietransfer/erfolgsbilanz/>
- <http://www.fraunhoferventure.de/>

American universities have comparable funds and manage them directly. That means they make grants or deal with credits in order to finance TT in terms of market implementation. Such Technology Commercialization Funds (TCFs) could be analyzed in detail. An example is available at: <http://tedco.md/program/technology-commercialization-fund-tcf/>

4. Conclusion

The present document has shown how to finance services for TTCs using a proper Business Plan Model. Thus, it has proposed a manner of how to create, implement and, in particular, run a TTC in order to allow offering services in a sustainable way. The steps mentioned above help to elaborate a reasonable business plan which comprises necessary elements for creating and running successful TTC. All together, these steps are the building block of the concept for TTC creation and implementation. Yet, this concept is constantly evolving. New experiences which could be gained must be integrated into the concept and new obstacles identified in practice ask for new answers. In order to be always up-to-date, this document therefore requires constantly input from new practical experience. Only such feedback loops can ensure that a tool-kit can help practitioners to create and run TTCs successfully.

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5. Bibliography

Hofstede, Geert (1983), "Dimensions of National Cultures in Fifty Countries and Three Regions," in Expiscations in Cross-Cultural Psychology, J.B. Derogowski, S. Dziurawiec, and R.C. Annis, eds., Lisse, Netherlands: Swets & Zeitlinger, 335-355.

Krattiger, A., Mahoney, R.T., Nelsen, L., Thomson, J.A., Bennett, A., Satyanarayana, K., Graff, G.D., Fernandez, C., Kowalski, S.P. (2007) (Eds.). Establishing and Operating Technology Transfer Offices. In Executive Guide to Intellectual Property Management in Health and Agricultural Innovation: A Handbook of Best Practices (Krattiger, et al, 2007.). MIHR (Oxford, UK), PIPRA (Davis, USA), Oswaldo Cruz Foundation (Fiocruz, Rio de Janeiro, Brazil), and bioDevelopments-International Institute (Ithaca, USA).

Mom, T.J.M., Oshri, I. & Volberda, H.W. (2012). The Skills Base of Technology Transfer Professionals. *Technology Analysis and Strategic Management*, 24(9), 871-891