



Best Practices in Technology Transfer Ecosystem Bulgaria, Croatia, Slovakia, Slovenia, Spaind and Türkiye

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1. Introduction

1.1. Background

This report compiles the best practices identified by project partners after conducting desk and field research, carried out within the scope of STEIDA (Strengthening Technology Transfer Ecosystem through Innovative and Digital Approaches) project, ref. Nº 2023-1-TR01-KA220-HED-000157242.

The project, which is funded under the "ERASMUS + programme", aims to strengthen the technology transfer ecosystem through an innovative and holistic approach which will foster national and international collaboration among HEIs, academics, businesses, students, entrepreneurs and other stakeholders by developing/using digital platforms and networks. This objective will be achieved through the implementation of the following main activities:

- Conducting a comprehensive study on the technology transfer ecosystem;
- Compilation of a report on best practices in technology transfer;
- Development of a curriculum for higher education institutions and students;
- Development of training modules for technology transfer professionals and newcomers;
- Conducting pilot training for building the capacity of technology transfer professionals/newcomers/students;
- Development of digital platform for cooperation between actors in the technology transfer ecosystem.

The present report of best practices has been developed in parallel with the Comprehensive Study on Technology Transfer Ecosystem Report, carried out within the scope of Activity 4, with both outputs to be used as a basis in the implementation of the other foreseen project activities.

1.2. Definition of technology transfer

Technology transfer can be defined as the process of exchange of knowledge, skills, ideas, inventions, innovations between on the one hand, the responsible actors for their development in the academic and scientific domains, and on the other hand, the beneficiaries, represented in particular by the business and industry players and by the wider general public. Technology transfer encompasses various activities, such as:

Management of technology transfer processes (digital services, innovative approaches, project support services, etc.);





- Commercialization of patents;
- University-industry cooperation;
- Promoting entrepreneurship;
- Creation of spin-offs.

2. Methodology

The process of collection of best practices included the following **4 stages: Initial Desk Research, Internal Review and Selection** of preliminary identified best practices, **Field research, Involvement of Stakeholders**. Data was gathered through **two-step qualitative research** with the use of templates for both the review of secondary sources and the field survey. This approach ensured the collection of identical information and significant level of trustworthy and reliable results. Similarly, the **assessment** of the collected data was held at **two levels** – internally by partners and externally by stakeholders. This double check led to improvement of the produced materials and ensured that the expertise and contribution of the organisations involved in the assessment has been reflected in the final collection of best practices. The research focused on answering the following main questions:

- WHAT? (What is the best practice about? What have been the main factors contributing for its success? What challenges have been faced and what actions have been taken to address them? To what extent is the best practice applicable in another setting? What has been the main impact of the best practice?)
- WHO? (Who is involved in the implementation of the best practice?)
- WHEN? (Since when the best practice has been in existence?)
- WHERE? (Where is the best practice located?)
- WHY? (Why is it important to study this best practice?)
- HOW? (How can certain aspects of the best practice be further improved?)

2.1. Initial desk research

Initial desk research involved the study of secondary sources, i.e. through searching information available on the Internet or in relevant literature. The most relevant results were then carefully reviewed and additional information was collected about each best practice identified. Each project partner was responsible for the collection of at least 4 best practices from the respective country.











2.2. Internal review and selection

The preliminary identified best practices were internally discussed and reviewed by project partners during the 2nd transnational meeting, held in Barcelona in September 2024. The partners provided among themselves feedback, comments and suggestions for improvement of the draft best practices collected during the initial desk research. This process of internal quality assessment has benefitted from the different and complementary expertise of the partners involved in the project which represent the main stakeholders in the field of technology transfer – higher education institutions (Karadeniz Technical University and University of Zagreb), business support organisations (Bulgarian Chamber of Commerce and Industry and Barcelona Chamber of Commerce, Industry, Services and Navigation), research institute (Jozef Stefan Institute) and a public body (Slovak Centre of Scientific and Technical Information). Following this internal review, the consortium voted in a poll, organized by Karadeniz Technical University, in order to select at least 2 best practices from each partner country to be further developed during the next stage of field research.

2.3. Field research

Field research involved the collection of data from primary sources, i.e. from the organizations responsible for the best practices. Each organization, which had been identified during the initial desk research as responsible for a best practice, was contacted by the respective project partner and requested to complete the questionnaire for field research. The interviews with the organisations providing the best practices were conducted via different means of communication – face-to-face or online meeting, email, phone conversation. The information obtained from the field research complemented and expanded the data gathered during the desk research.

2.4. Involvement of stakeholders

Each partner also held face-to-face and online meetings with stakeholders in the process of collecting the best practices in order to review and discuss the main findings of the desk and field research conducted in each partner country. Stakeholders were asked to provide their input in terms of feedback, suggestions for improvement, recommendations, insights, etc. Their contribution has been vital for ensuring the quality assessment and external validation of the final output. The final report of best practices has been published on the project's website and disseminated to stakeholders.











3. Best practices

- 3.1. Best practices from Türkiye
- 3.1.1. KTU TTC Liason Offices in Organised Industrial Zones (OIZ)

KTU TTC Liaison Offices in Organized Industrial Zones (OIZs)



Brief description

University-Industry Cooperation (UIC) plays a critical role in the development of innovative ideas and technologies. However, the inability of both the industry and the university to reach each other easily and the difficulties experienced in communication constitute an important obstacle in the effective implementation of this cooperation. The inability to integrate the studies carried out at the university with the industry and the problems faced by the industry in communicating its needs to the academy lead to a weakening of cooperation. At this point, TTO interface structures come into play and address the need for both the university and the industry to communicate more effectively.

Although TTOs are an important support structure for universities, the fact that the industry is physically distant from the university and that industrialists cannot find time to physically reach the university and TTO due to their busy work schedule is an important problem. This problem limits the interaction between industry and academia and reduces the potential for cooperation.

Following such observed problems, Karadeniz Technical University Technology Transfer Application and Research Center (KTU TTC) came up with the idea of establishing a liaison office in Organized Industrial Zones (OIZ) in order for industrialists to benefit more easily from the information and technological opportunities offered by the university. This liaison offices were planned to improve university-industry cooperation opportunities, speed up processes and facilitate industrialists' access to university resources. By filling this gap, KTU TTC has taken important steps towards strengthening cooperation by ensuring that not only the university but also the industry can easily access the TTO.













The establishment of liaison offices by technology transfer offices in organized industrial zones strengthens the interaction between industry and academia and enables innovative solutions to emerge. Technology Transfer Office liaison offices encourage cooperation, accelerate the flow of technological information, support innovation and facilitate university-industry cooperation by providing training and awareness-raising activities. These liaison offices make it possible to follow the needs of the industry more closely, enable academics to test their projects in the field, facilitate companies' access to government incentives, and make significant contributions to economic growth and competitiveness.

In 2018, with the decision taken by KTU TTC, liaison offices were established in the Organized Industrial Zones in the region and an interface service that industry representatives can reach at any time thanks to the experts in TTC. In about 6 years, these offices have led to a significant increase in the number of matchmaking with academics, publicly funded project applications, contracted R&D projects and R&D Center establishments. Furthermore, thanks to this process, industrial organizations have benefited more effectively from government incentives and the innovation ecosystem in the region has rapidly developed. TTO liaison offices in OIZs have created a sustainable bridge between universities and industry and contributed significantly to economic growth in the region.

Organisation providing best practice and location

Karadeniz Technical University Technology Transfer Application and Research Centre, KTU TTC, Trabzon.

Website

https://www.ktu.edu.tr/ttoen

Duration of best practice

Karadeniz Technical University Technology Transfer Application and Research Center has been continuing its organized industrial zones (OIZ) liaison offices establishment activities since 2018.

What is this best practice about?

As KTU TTC, it is thought that it would be an efficient strategy to establish liaison offices in OIZs in order to strengthen the cooperation between industry and academia and to increase the R&D potential of industrial enterprises in the region. The importance of having an active presence in OIZs has been understood in order for industry representatives to have easier access to the information and technology resources of the university and for the university to provide fast and effective solutions to the needs of the industry. In this context, KTU TTC has created a model that aims to bring industrialists together with university resources and encourage regional innovation.

In order to establish contact with companies within the scope of KTU TTC Liaison Offices in OIZs, protocols are signed with the OIZ administrations in the region. In line with the protocols signed with the OIZ administrations, one of the offices in the OIZ Regional Directorate building











is allocated as a liaison office. Liaison offices are visited at least once a week to hold meetings with companies that made appointments. In addition, companies are also visited on-site and interviewed one-on-one, meetings are organized, information is obtained about their R&D levels and needs, and information about R&D incentives is provided. After the R&D needs of the companies are determined, support programs are researched and studies are initiated to match the academician suitable for the need. The active presence of TTOs in OIZs is of great importance for regional and national economic development.

Since the establishment of the liaison offices in 2018, the number of companies contacted has increased every year. In 2019, 15 first-time contact companies were contacted, and this number reached 76 by 2024 through the liaison offices established in 3 different OIZs in the region. As a result of one-on-one meetings and information provided to companies, efforts were initiated for two companies within the OIZ to receive the title of "R&D Center" in order to benefit from the support and incentives provided by the Ministry of Industry and Technology and to make technology transfer sustainable. As a result of the studies carried out, in 2018 Çolakoğlu Makina in 2018 and TİSAŞ (Trabzon Silah Sanayi) in 2019 were granted the title of "R&D Center" by the Ministry of Industry with the direct support of TTO. In addition, in 2020, Mekap Deri ve Ayakkabı, which operates in the leather and footwear sector, was established within Trabzon Technopark and an accredited Test Center of the company was brought to the technopark ecosystem.

Training and awareness-raising activities organized for industrialists through liaison offices have spread the importance of R&D and innovation to a wider audience. Liaison offices broke the closed structure of industrial organizations and paved the way for new collaborations. This has contributed positively to economic development at both local and national levels. The R&D project supports offered by many institutions were mentioned through the information activities carried out for companies and many projects were designed. In particular, while the number of companies benefiting from the supports offered by TÜBİTAK for the industry was only 2 before 2018, this number reached 6 with the establishment of the liaison offices. In addition, many project applications were made within the scope of TÜBİTAK, KOSGEB and DOKA etc. programs and academician pairings were carried out. In total, 43 academician pairings were made in the companies within the OIZ, and 20 different projects realized as a result of these pairings were supported by public funds.

Continuous and regular contacts have increased the sense of trust between industrialists and TTO, which has enabled the establishment of more sustainable and productive collaborations. This relationship of trust has enabled industrialists to better understand their needs for TTO and accelerated cooperation processes. In fact, the contacts initially made through liaison offices have been replaced by direct and fast communication over time. Now, industrialists share their needs and projects by making direct contact with TTO without the need for any intermediary. Thus, cooperation processes have become more effective and efficient. This development stands out as one of the most concrete indicators of TTO's impact on industry and the added value it provides.

Thanks to the existence of liaison offices within OIZs where industrialists are concentrated, which encourage them to take quick action, cooperation visits to industrialists' offices in the first phase have gradually turned into industrialists visiting the liaison office.

In the current situation, thanks to the increased awareness about TTO services and successful practice results, there is no need to maintain the liaison offices of TTO in the OIZs. As a result of the successfully implemented strategy, the recognition of KTU TTC has increased among the











companies in the region, a university-industry cooperation culture has been established, and companies have been able to communicate directly with the university and KTU TTC without the need for a contact office, and to develop and expand their cooperation.

What have been the main factors contributing for the success of the best practice?

Key factors contributing to the success of this good practice could be the following:

The protocols signed with OIZ administrations formalized the cooperation and allowed for regular processes. This was a critical step towards trust and sustainability. In addition, the fact that the liaison offices are located directly within the OIZ Regional Directorate as a campus has increased the visibility of TTO, raised awareness and significantly facilitated companies' access to TTO. Regular presence at the liaison points on certain days of the week enabled face-to-face communication with industrialists, helped to better understand the needs of companies and strengthen cooperation. This practice increased the potential for cooperation and supported innovation and R&D activities. Identifying the specific R&D needs of companies and matching them with appropriate academics contributed to the effective results of the implementation. This directly benefited both industry and academia.

In terms of contributing to regional development, the active presence of TTOs in OIZs has directly served local and national economic development goals. Identifying regional needs and producing solutions for these needs is an important factor for regional development and economic growth.

All related factors stand out as the main factors supporting the success of the implementation.

What challenges have you faced in the implementation of the best practice and what actions have been taken to address them?

The fact that the companies within the OIZ were not familiar with TTO structures and that the culture of university-industry cooperation was quite weak caused difficulties in terms of cooperation and trust. Companies thought that working with universities could be risky or complicated.

To overcome this challenge, protocols were signed with OIZ administrations by establishing trust-based relationships. The fact that TTO was supported by the OIZ management made it easier for companies to trust TTO. In addition, regular information meetings and the sharing of success stories helped industrialists overcome their reservations about collaborating.

Following the establishment of the liaison office, there were difficulties in making initial appointments for on-site visits to industrialists. There were difficulties in reaching the management units of the companies. In order to overcome this problem, it was decided that appointments for the first on-site visits would be made by the OIZ management and the visits would be made together with the OIZ management. In this way, direct and easier communication with companies was established and TTO was able to establish a reliable bond with industrialists.

After establishing contact with the companies, the lack of interest and need of the companies emerged as another challenge. Firms have not shown sufficient interest in R&D and innovation











or have not felt the need to do so. In order to overcome this situation, sample projects and success stories were shared to increase the competitive advantages of companies.

How can certain aspects of the best practice be improved?

More comprehensive protocols and collaborations can be developed to cover industrial zones outside of OIZs. In addition, protocols specific to different sectors can be created and customized cooperation models can be implemented for various industrial sectors. By expanding the cooperation network, more companies and industrial organizations can be reached, thus increasing the impact of the implementation.

A <u>Matching-Collaboration Platform</u> can be developed to match companies' R&D needs with academics' areas of expertise more quickly and accurately, and to optimize the matching process between academics and industrialists. With this platform, a digital tool can be provided to establish collaborations and plan new research and innovation projects and studies. In this way, the matching process can be accelerated and the right expertise can meet the needs more effectively.

Why is it important to study this best practice?

In general, TTOs are physically located in technology development zones, technoparks, universities and research institutions. Establishing liaison offices of technology transfer offices in organized industrial zones where industrialists are located provides the following benefits.

Supporting Innovation and R&D: Technology transfer offices serve as a bridge between universities and research institutions and industry, facilitating industrial enterprises' access to new technologies, innovations and R&D projects. Liaison offices in OIZs enable industrialists to gain competitive advantage by rapidly offering these innovative solutions.

Increased Productivity: Quick access to information on new technologies and processes helps industrialists improve their production processes and increase their productivity. The presence of technology transfer offices in OIZs ensures faster adoption of these technologies.

Information and Experience Sharing: Opportunities for co-operation and networking increase both between companies in OIZs and between academia and industry. Technology transfer offices guide industrialists in information sharing and joint projects and contribute to the dissemination of best practices in the sector.

Commercialization and IPR Management: By establishing direct communication between universities, research institutions and industry, it facilitates the transformation of academic knowledge and findings into commercial applications. This co-operation strengthens the local economy and provides added value to industry. TTOs support industrialists in patenting and intellectual property rights. In this way, industrialists create a more secure trade environment by protecting their innovative products and processes.

International Competitiveness: Technology transfer offices provide information flow on global technology trends and innovations. Liaison offices established in OIZs strengthen the export potential of industrial companies by increasing their competitiveness in the international arena.











New Business and Funding Opportunities: Liaison offices offer new markets and business opportunities to industrialists. They also provide guidance on how they can benefit from various funding sources and incentives, which provides them with the necessary financial support to grow their business.

Training and Capacity Building: Liaison offices established in OIZs organize trainings, seminars and workshops for the industry. Such activities increase the competences of industrialists in technology and business management.

As a result, the establishment of liaison offices in OIZs by TTOs enables industrialists to adapt faster, develop innovative solutions and gain a stronger position in global markets. This creates significant benefits such as economic growth, employment increase and sectoral competitiveness.

By examining such good practices, it is possible to learn about effective models of collaboration and provide guidance for other universities and industrial organizations. Examining the factors that contributed to the success of this application provides important insights on how these factors can be used when planning and implementing similar projects. Understanding the success factors will make it easier for other TTOs to achieve similar success. In addition, the active role of TTO in OIZs is an important strategy for regional and national development. Examining this practice can provide important clues on how development strategies can be planned and implemented more effectively. In this way, it may be possible to achieve similar successes in other regions.

To what extent is the best practice applicable in another setting?

The unique good practice called TTO Liaison Offices in Organized Industrial Zones (OIZ) has the potential to be implemented in all regions where there are organized industrial zones. Establishing liaison offices of TTOs in OIZs is an effective way to strengthen university-industry cooperation. The applicability of such a good practice in other regions depends on the assessment of the following factors:

Structure and Potential of the Industrial Ecosystem: The density of OIZs in the region, the diversity of sectors operating and R&D capacity are important. If the region has a strong industrial infrastructure, TTO liaison offices can work more effectively and create more impact.

University Capacity: The academic expertise, research infrastructure and technology transfer strategies of the universities in the region affect the success of the implementation. Universities should be capable of responding to the needs of the industry.

Local Administration and Support Mechanisms: Local administrations, development agencies and regional incentives can increase the sustainability of the implementation. The openness of OIZ administrations to university cooperation is also critical for success.

Culture of Cooperation and Awareness: The predisposition of industrialists in the region towards R&D and innovation, and their openness to cooperation with universities directly affect the effectiveness of the implementation. This culture needs to be strengthened through training and awareness raising activities.











Financial and Human Resources: TTO should have sufficient financial and human resources to operate these liaison offices sustainably. It is important to have expert teams to respond to the support requests of industrial organisations in the regions in a timely manner.

The establishment of liaison offices of TTOs in OIZs can also be applied in other regions to accelerate cooperation and support the innovation ecosystem. However, the dynamics of each region.

What has been the main impact of the best practice?

The main impact of the best practice has been the development and strengthening of cooperation between universities and industry. The OIZ Liaison Points have made the collaboration between universities and industry more direct and effective. In this way, academic knowledge and industrial experience were better combined, and R&D projects and innovative solutions gained momentum. Liaison points have enabled industrialists to access technological developments and expertise at universities more quickly. This accelerated flow of information has increased the competitive advantage of firms and supported regional economic development.

Since the establishment of the liaison offices in 2018, the number of companies contacted has increased every year. 15 companies were contacted in 2019, and this number reached 76 by 2024. As a result of one-on-one meetings and information provided to companies, efforts were initiated for two companies within the OIZ to receive the title of "R&D Center" in order to benefit from the support and incentives provided by the Ministry of Industry and Technology and to make technology transfer sustainable. As a result of the studies carried out, in 2018 Çolakoğlu Makina in 2018 and TİSAŞ-Trabzon Silah Sanayi in 2019 were granted the title of "R&D Center" by the Ministry of Industry with the direct support of TTO. In addition, in 2020, "Mekap Deri ve Ayakkabı", which operates in the leather and footwear sector, was established within Trabzon Teknokent, and an accredited Test Center was brought to the technopark ecosystem of the company.

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3.1.2. 1812 - Investment-Based Entrepreneurship Support Program (BiGG Investment)



Brief description of best practice

The 1812 Investment-Based Entrepreneurship Support Programme (BiGG Investment), funded by TÜBİTAK (Scientific and Technological Research Council of Türkiye), a subsidiary of the Ministry of Industry and Technology of Türkiye, is designed to support entrepreneurs at various stages of their ventures, from conception of an idea to establishing a commercial presence in the market.

The objective is to facilitate the transformation of technology and innovation-oriented business ideas into enterprises with the potential to generate value and employment opportunities, thereby fostering qualified entrepreneurship and the development of technology-based startup companies that can compete in international markets, create cutting-edge, high-tech products and processes, and contribute to the advancement of the sector.

The Programme supports entrepreneurs both financially and strategically, helping them to grow their businesses successfully and develop sustainably. Entrepreneurs can develop more effective business strategies with the knowledge and support they receive through the Programme. The Programme aims to strengthen Türkiye's entrepreneurship ecosystem with the state funds.

Organisation providing best practice and location

The Scientific and Technological Research Council of Türkiye (TÜBİTAK)/(Ministry of Industry and Technology of Türkiye).











Website

https://tubitak.gov.tr/en/funds/industrial/national-support-programs/1812-investmentbased-entrepreneurship-support-program-bigg-investment

Duration

Since 2012.

What is this best practice about?

The TÜBİTAK 1812 Programme, which has been implemented since 2012 and modified over the years, provides investment support to technological and innovative business ideas.

Since 2015, TÜBİTAK has been receiving support from 'Implementing Organisations' authorised by TÜBİTAK in Türkiye for the execution of the 1812 Programme. Authorised implementing organisations receive and evaluate the business idea applications of entrepreneurs in the thematic areas specified in the calls opened under the 1812 Programme and select the ones that have a high probability of turning into a successful business plan. Implementing organisations provide pre-incubation/accelerator services to entrepreneurs for the selected business ideas, ensure the development of business plan proposals to be prepared by the entrepreneurs with expert support, and in the final case, facilitate the submission of qualified applications to TÜBİTAK. In summary, as of 2015, business idea applications that have reached a certain maturity and quality are submitted to TÜBİTAK through implementing organisations. With this update, it was possible to prevent the elimination of many qualified initiatives that were eliminated by TÜBİTAK due to the fact that they could not be successfully developed and transformed into a business plan, even if their business ideas were actually good and qualified.

The Concept of the TÜBİTAK 1812 Programme

The Programme is designed to facilitate the transformation of innovative business ideas into commercial products, processes and services and consists of three phases as described below.

In the initial phase, entrepreneurs present their business ideas to implementing organisations. These organisations evaluate the ideas and, if they deem them to have a high probability of developing into a successful business plan, provide the entrepreneurs with the requisite support services. As mentioned above the implementing organisations are selected by TÜBİTAK and provide accelerator services. At this juncture, the implementing organisations furnish the entrepreneurs with mentorship, networking opportunities, training, and other forms of assistance. They also conduct technical and commercial assessments to ascertain the viability of the business idea as it transitions into a business plan. Phase 1 is concluded by the deadline for submission of the business plan, as stipulated in the call for proposals for entrepreneurial projects. In contrast to other funding programmes, where the applicants are responsible for completing the application process independently, the TÜBİTAK BiGG Programme allows implementing organisations to facilitate the project application process on behalf of the applicants, with the support they provide.











In the second phase of the Programme, entrepreneurs who are decided to be supported within the scope of the evaluation made by TÜBİTAK at the end of the first phase and who are entitled to receive the Seal of Excellence, are asked to establish a company in accordance with the definition of establishment.

An investment agreement is signed between TÜBİTAK and the entrepreneur for a maximum of 5% of the amount covered by the support in Stage 2. Following the investment agreement, a project monitoring contract is signed between TÜBİTAK and the organisation. Conceptual design, technical and economic feasibility, technological development (commercial prototype, demo, simulation, software algorithm, etc.) activities to be carried out by the organisation within the framework of the business plan and the conversion of the outputs obtained as a result of these activities into commercial value are included in Phase 2.

Phase 3 is designed to enhance the commercialisation potential of the outputs generated by the organisation in the preceding phase. This is achieved by optimising their performance and functionality through research and development studies. Phase 3 commences with the organisation preparing a project proposal and applying to the TÜBİTAK 1507 SME R&D Start-up Support Programme. Those entrepreneurs who are deemed eligible by TUBITAK following the evaluation process are then eligible to receive further finance.

Start-ups that have applied as a continuation of the BIGG Investment Programme are additionally entitled to 10% overhead support. They are also allowed to apply continuously to the relevant Programme within two years following the completion of the 1812 project. Applicants outside the 1812 Programme must wait for the call periods to open in order to apply for this Programme.

The 1812 Programme's structure with implementing organisations improves the quality of its initiatives and increases success rates by going beyond general statistics.

It encourages domestic innovation and technological development in Türkiye, increases the competitiveness of Türkiye in the international arena with the emergence of competitive products, enables the entrepreneurs to develop strategic collaborations by supporting them to meet with investors, business professionals and other entrepreneurs, and enables entrepreneurs to launch their projects faster through the procurement of start-up capital.

What have been the main factors contributing for the success of the best practice?

The 1812- Investment-Based Entrepreneurship Support Program (BiGG Investment), a funding source offered to entrepreneurs by the Scientific and Technological Research Council of Türkiye (TÜBİTAK) under the Ministry of Industry and Technology of the Republic of Türkiye, supports entrepreneurs operating in high-tech fields in Türkiye and encourages the emergence of innovative products with high added value. Strategically identifying the target audience and focusing on the right entrepreneurs plays a critical role in the success of such programs. With the inclusion of implementing organizations in the Program process, the Program not only provides financial support to entrepreneurs, but also supports them throughout the entire entrepreneurship process with training, guidance and accelerator services. With the contribution of these organizations, BiGG Investment has gained greater recognition nationwide and achieved a significant increase in number of applications. The Program, which has a gradual and comprehensive structure, offers entrepreneurs with extensive support from the idea stage to the market; it enables the transformation of innovative











ideas into successful commercial products. This entrepreneurship support, which first started as a grant program under the name 1512 BiGG Program, has evolved into an investmentoriented structure over time and continues under the name 1812 BiGG Investment. In this new structure, TÜBITAK invests in startups and becomes a partner in return for a certain share, thus supporting the sustainable growth of startups.

The comprehensive and phased structure of the TÜBİTAK 1812 BiGG Investment Program provides support to entrepreneurs from the idea stage to the market. This structure facilitates the transformation of innovative ideas into commercial products. The Program consists of three phases:

Phase 1: Business Idea Application and Implementing Organization Services

At this stage, entrepreneurs present their business ideas to Implementing Organizations authorized by TÜBİTAK. Implementing organizations evaluate the submitted business ideas and identify those with a high potential to turn into a successful business plan. Selected entrepreneurs are provided with mentoring, networking, training and similar accelerator services. In this process, technical and commercial validation of the business idea is carried out. Phase 1 is completed on the business plan deadline specified in the call for project support. The business plans prepared with the services provided by the implementing organizations are uploaded to the relevant system of TÜBİTAK for Phase 2. The owners of the uploaded business plans, i.e. project executives, present their business plans to the referees in TÜBİTAK panel evaluations and answer any questions the referees have. At the end of the panel, the referees discuss among themselves and determine whether the business plans are suitable or not.

Phase 2: Finalization of TÜBİTAK Evaluations, Company Establishment and Investment

Entrepreneurs who successfully complete Phase 1 and whose business plan is approved by TÜBİTAK are entitled to receive the first investment by establishing a company in Phase 2. The company enters into an investment agreement with the TÜBİTAK BiGG fund in return for the amount included in the scope of support in Phase 2. Following the investment agreement, a project monitoring agreement is signed between TÜBİTAK and the organization. After the establishment and contract processes are completed, TÜBITAK BiGG Fund **invests 900,000** *[‡]* **in exchange for a 3% share in** the startups as of 2024. However, additional investment opportunities are also offered to business plans that operate in certain thematic areas and have identified superior qualities.

For example, for projects operating in priority areas such as clean technologies, this rate can go up to 5% with additional support. In this case, TÜBİTAK makes a basic investment for 3% of the shares, while an additional investment is provided for the remaining 2%. This flexible aims to provide more support to innovative and high-impact projects.

Investing at this stage provides the resources necessary for the growth and development of the company, as well as enabling startups to transition to the market in a sustainable way.

Phase 3: R&D and Commercialization

Phase 3 aims to further develop the enterprise, deepen the R&D processes and increase the commercialization potential of the product or service. Enterprises that establish a company with the investment provided in Phase 2 can apply to TÜBİTAK's 1507 SME R&D Start-up Support Program at this stage. Within the scope of this stage, enterprises are provided with the opportunity to carry out technical activities such as detailed design, prototype development, trials and field tests.











With the support of the Erasmus+ Programme of the European Union

Entrepreneurs who successfully complete the TÜBİTAK 1812 BiGG Investment Program do not have to wait for a call to be opened to apply to the 1507 Program, unlike other companies. Companies that successfully complete their BiGG Investment-supported projects are given the opportunity to continuously apply to Stage 3 (1507) within 24 months following the completion of the project. In addition, they are entitled to receive 10% additional general expense support.

These are not the only supports provided within the scope of the Program defined in three stages. Entrepreneurs who receive support from the BiGG Investment Program can apply to the BiGG+ Program to increase their commercialization success. With this program, it is aimed to increase the turnover of entrepreneurs, increase their current market share, enter new markets and increase sales abroad or current sales abroad.

Another support that contributes to the BiGG Investment Program is the BiGG Sports Awards, which are organized in cooperation with the Republic of Türkiye Ministry of Youth and Sports and TÜBİTAK. This Program aims to produce new information in sports and all sports-related areas, develop innovative approaches, support technological entrepreneurship, and raise awareness in the field of sports technologies.

As a result, the TÜBİTAK 1812 BiGG Investment Program has a comprehensive structure to ensure that innovative business ideas are commercialized and transformed into sustainable businesses. This three-phase Program provides financial support to entrepreneurs in bringing their business ideas to life, while also supporting their success with training, guidance and technical verification opportunities. The support and cooperation networks provided during this process increase the competitiveness of entrepreneurs in local and international markets, while additional programs such as BiGG+ and special supports such as BiGG Sports Awards further their success in the fields of commercialization and innovative technology. These broad-framed supports provided by TÜBİTAK make significant contributions to the technology-focused entrepreneurship ecosystem in Türkiye and pave the way for the development of innovative products and services that can compete with the world in high-tech fields.

What challenges have you faced in the implementation of the best practice and what actions have been taken to address them?

The difficulties encountered in the implementation of the Program and the measures taken to overcome them can be listed as follows:

It is important to select the right entrepreneurs during the implementation phase of the Program. There are two selection stages in order to make this selection correctly. The first is carried out by the implementing organizations. Implementing organizations make calls to be sent to TÜBİTAK within the scope of the Program and collect the applications as a result of these calls. From the collected applications, the applicants who are not suitable for the Program (suitability for the subject, technology level, TRL level, team competence, etc.) are eliminated and the accelerator Program is started with suitable entrepreneurs. The second selection is carried out through panels organized by TÜBİTAK. Entrepreneurs who successfully complete the implementing organization phase send their projects to TÜBİTAK. TÜBİTAK forms a panel consisting of academicians and industrialists to evaluate the applications. The entrepreneurs to be supported are determined as a result of these panels. The implementing organization method, which started in 2015 within the scope of the Program, provides significant benefits both in terms of selecting the right enterprises and reducing TÜBİTAK's workload.











Another problem is the difficulty experienced by the enterprises in scaling up. According to the analysis results, the vast majority of the supported enterprises (95%) started as micro-scale and only 6.7% were able to move to a higher scale group. In order to overcome this problem, the **BiGG+** Program was launched to provide additional guidance and support to the enterprises regarding growth strategies within the scope of the Program. In addition, a portal was created at bigg.tubitak.gov.tr. This portal supports the networking activities of the enterprises that receive BİGG support.

Another difficulty is limited export performance. In order to solve this problem, there are exportrelated supports in the **BiGG**+ Program regarding access to international markets.

The intensity of the operational activities of the Program may pose an obstacle during the implementation phase. As a solution to this problem, it is important to build a well-designed system and carry out the process with qualified personnel.

How can certain aspects of the best practice be improved?

Considering the nature of entrepreneurship, it is very important to catch up with trends. For this reason, the completion of the process and the establishment period of the companies from the date they apply to the Program are very important. In order to speed up this process in the Program, referee evaluation periods can be shortened and the use of digital tools can be increased during the process management.

In order to monitor the performance of the Program, it can be integrated with systems where entrepreneurs who are supported can enter their data at certain intervals. In this way, the impact assessment processes of the Program can be improved. By conducting more frequent and detailed impact analyses, the Program can be continuously improved.

In order to create international collaborations and networking opportunities, collaborations can be established with existing portals.

Entrepreneurs can be provided with more guidance and support on Intellectual and Industrial Property Rights (IPR). Expert support can be provided on IPR strategies, patent application processes and patent commercialization.

Why is it important to study this best practice?

The multi-layered structure of the Program facilitates the transformation of innovative ideas into commercial products by providing comprehensive support to entrepreneurs from the idea stage to the market. This structure ensures the emergence of high value-added enterprises. In particular, the inclusion of implementing organizations in the process increases the effectiveness and success of the Program. Implementing organizations play an important role in the selection of entrepreneurs, identifying suitable candidates and providing them with training, guidance and accelerator services. This support develops the talents of entrepreneurs and increases their chances of success. At the same time, implementing organizations have increased the recognition of the Program throughout the country and significantly increased the number of applications. In this way, entrepreneurs operating in innovative technology fields are reached and supported more effectively. The fact that the Program is carried out as an investment Program by the public is also noteworthy. The TÜBİTAK investment fund closely











follows the process as a partner of entrepreneurs and organizes its relations with the entrepreneurs it has invested in through the signed contract. The investment fund's future plans include follow-up investments.

To what extent is the best practice applicable in another setting?

This good practice can be applied after the content of the application is adapted to the countries. The phased structure of the Program can be used as a model for similar entrepreneurship support programs in different countries or regions. The approach of supporting the process from the idea stage to commercialization offers solutions to the difficulties encountered at every stage of entrepreneurship. The inclusion of implementing organizations in the process is an approach that can be adopted in different ecosystems. The funder that initiates the Program can reach the targeted entrepreneurs more easily by creating an intermediary mechanism similar to the implementing organizations and can both obtain entrepreneurs at the desired level and increase the level of entrepreneurs with the accelerator Program to be provided. If the implementing organizations are established with a regional logic, it also allows the development of support mechanisms appropriate for local dynamics.

The high-tech areas that the Program focuses on can be adapted to the strategic priorities of other countries or regions. For example, special programs can be designed for certain sectors or technology areas. The Program can be designed as an investment program or as a grant program at certain rates.

However, if the Program is implemented in another environment, factors such as local economic conditions, maturity of the entrepreneurial ecosystem, availability of financial resources and legal framework should be taken into account. Each country or region should adapt the program according to its own specific conditions and needs.

What has been the main impact of the best practice?

The TÜBİTAK BiGG Program is an important program implemented in Türkiye to support technology-based entrepreneurship, commercialize innovative business ideas and contribute to economic development. The main effects of the Program can be evaluated in various dimensions such as the increase in the number of technology-focused enterprises, the effect of accelerator supports, the increase in the participation of women entrepreneurs, the protection of intellectual property rights, export performance, employment opportunity and the provision of new investment-based support. These facts are detailed below. In addition, since the most recent report published by TÜBİTAK covers the years 2012-2023, the evaluation of the facts given below was made with the support of the relevant report.

1. Its Impact on the Increase in the Number of Technology-Focused Startups in TÜRKİYE The BiGG Program has contributed to the increase in the number of startups formed in Türkiye with the 100% pre-paid grant support it provides. As a result of the innovations made in the 1512 BiGG Program as of the 2023-1 Call, the name of the relevant program has been changed to 1812 BiGG Investment and the grant program has been transformed into a new investment program. Since the beginning of the Program, 44,981 business idea applications have been received, and approximately half of these applications, 20,296 entrepreneurs, have been included in the first phase process. As a result of the first phase, 2,293 of the 6,494 entrepreneurs whose projects were submitted to TÜBITAK were supported and incorporated and their business ideas were put into practice.













Call Voor	Total Business	Entering 1st Stage	Business	Entering	Supported
real	Applications	from Accolorator	Applications	Zilu Stage	ГШПБ
	Applications	Program*	Applications	Pallets	
2012	947	745	360	360	112
2013	1448	1220	378	378	126
2014	1290	1251	337	336	110
2015	3015	1370	552	545	208
2017-1	3327	1460	320	312	195
2017-2	3308	1276	403	394	207
2018-1	3091	1438	448	422	136
2018-2	4594	1833	564	553	137
2019-1	4194	1589	397	395	151
2019-2	3289	1297	366	362	138
2020-1	4494	1522	473	472	145
2020-2	2569	981	345	339	116
2021-1	2395	1114	309	305	112
2021- Green	969	446	171	168	42
2022-1	2182	844	321	320	128
2022- Green	984	457	217	217	67
2023-1 (1812)	2885	1453	712	515	153
TOTAL	44981	20296	7277	6 <mark>494</mark>	2293

*The Accelerator process (UK) was added to the program as of 2015.

2. The Impact of Accelerator Support (Implementing Organization Support - IO)

Implementing organizations stand out as a critical element in the success of the BiGG Program. Between 2012 and 2015, entrepreneurs applied directly to TÜBİTAK with their business ideas and were evaluated by Stage 1 panels. Entrepreneurs who qualified to pass the 1st stage could apply to TUBITAK for the 2nd stage, and entrepreneurs who were found suitable could establish their companies by receiving support from TÜBİTAK. In 2015, TÜBİTAK introduced an innovation to the program by including the accelerator program in the 1st stage processes and developed the Implementing Organization system to run these accelerator programs. TÜBİTAK authorizes institutions/organizations such as universities, technology transfer offices, technology development zones, venture capital funds that support technology transfer as implementing organizations. While there were 17 BiGG implementing organizations in 2015, as of 2023, 149 IOs are operating within the scope of the program to provide support to the entrepreneurship ecosystem. These organizations provide entrepreneurs with accelerator services such as education, mentoring, access to business networks, and help applicants develop their business plans. Accelerator support not only helps entrepreneurs develop their business ideas, but also increases the survival rate and success of their ventures. This support mechanism strengthens regional and sectoral collaborations and ensures the spread of entrepreneurship throughout the country.











3. Increase in Female Entrepreneurship Rates

One of the notable effects of the BiGG Program is the increase in the presence of female entrepreneurs in the ecosystem. The rate of supported female entrepreneurs, which was 10% in 2012, has increased to 31% as of the 2023-1 call. This increase demonstrates the effectiveness of the steps taken and the support provided to encourage female entrepreneurship. Supporting female entrepreneurs is an important step towards ensuring gender balance in the entrepreneurship ecosystem, and developments in this area contribute to women's greater involvement in innovation and technology-based initiatives.

4. Strengthening Intellectual and Industrial Property Rights

The BiGG Program supports the protection of intellectual property rights so that the innovative business ideas it supports can create long-term value. To date, 101 trademarks, 69 patents, 12 designs and 11 utility models have been registered by BiGG initiatives. These registrations protect the innovative solutions of initiatives, allowing them to gain competitive advantage and create long-term commercial value. The protection of intellectual property rights is of strategic importance in terms of initiatives receiving investment and achieving a strong position in the market.

5. Export Performance and Contribution to the Economy

The BiGG Program contributes to the international markets and export activities of the enterprises it supports. The total exports of BiGG enterprises have reached \$30.4 million by 2023. \$1.3 million of this export consists of goods exports and \$29.1 million of services exports. The BiGG Program supports technology-based products and services to become competitive in foreign markets, enabling TÜRKİYE to take its place in the global market. Such initiatives contribute to Türkiye's economic growth and the reduction of the current account deficit.

6. Creation of New Employment Areas

Another important impact of the Program is its capacity to create employment. With the support of technology-based initiatives, the BiGG Program has enabled the creation of 2,512 new jobs. This increase in employment directly contributes to the economy by directing qualified labor to technology sectors. These new job opportunities created in the entrepreneurship ecosystem also allow young people and talented labor to develop themselves in these areas.

7. Transformation of BiGG Program Fund into Investment Model

With the innovation introduced to the BiGG Program in 2023, the current name of the program has become 1812 Investment-Based Entrepreneurship Support Program (BiGG Investment). With the 1812 Program, entrepreneurs are provided investment support in return for a 3% share through the TÜBİTAK BiGG Fund. This fund is the first investment-based support model of the Program and aims to ensure the financial sustainability of entrepreneurs and to support them in bringing their technology-based business ideas to the market faster. Special support such as 1,500,000 \ddagger investment in return for a 5% share are provided to entrepreneurs operating in environmentally friendly and sustainable areas, especially clean technologies. Such investment-based support contributes to the financial strengthening of enterprises, increases their success rates and enables more innovative projects to be brought to the economy.

In summary, the contributions of the BiGG Program to the Turkish entrepreneurship ecosystem are quite comprehensive. The impact of the Program is evident in various areas such as increasing the number of initiatives, transforming business ideas into qualified business plans thanks to accelerator support, encouraging women's entrepreneurship, protecting intellectual property rights, increasing export capacity, supporting qualified employment and









implementing new investment-based models. While strengthening the contribution of entrepreneurship to national development, the BiGG Investment Program serves as an important leverage in Türkiye's transition to a technology-based economy.

3.2. Best practices from Bulgaria

3.2.1. South East European Innovators Program



A ABLE CLEANTECH KAROL SCACHARY DESCO

Brief description

South East European Innovators Program (SEEIP) - a custom program that supports founders of research-based startups throughout their entrepreneurial journey by providing incubation, acceleration, and tech transfer services to startups from the Balkan region and beyond. The aim of the program is to nurture an ecosystem that facilitates, supports and develops initial research ideas into successful startups and helps them grow in international markets. SEEIP is an incubation programme of Sofia Tech Park aimed at start-up companies from Bulgaria and South East Europe that develop technologies and innovations in the field of information and communication technologies, green energy and life sciences. Being a government run project on behalf of Sofia Tech Park, the program is free of charge to all participants and is counted as state support for young entrepreneurs.

Organisation providing best practice and location

The program is provided by Sofia Tech Park – the first science and technology park in Bulgaria, which is based in Sofia, Bulgaria. Sofia Tech Park is a hub for global, regional, and national researchers and innovative companies, focusing on information technology, life sciences and green energy. Its main priorities are to enhance the competitiveness of science and entrepreneurship by improving knowledge exchange between academic circles and the











business community, supporting start-up companies and innovative ideas, and catalyzing the commercialization process of scientific research.

Websites

https://seeip.eu/ - Website of program https://sofiatech.bg/ - Website of Sofia Tech Park

Duration of best practice

The program itself has been in existence since 2023, but Sofia Tech Park has been providing similar support and services to more than 60 start-ups since 2016.

What is this best practice about?

SEEIP is a hybrid program that blends incubation, acceleration and tech transfer features. It facilitates digital incubation through e-learning, networking events, mentorship and alumni gatherings. The participants in the program are provided with independent R&D facilities, qualified specialists, and know-how to support them in building their entrepreneurial business competencies and making their start-up succeed.

The modules of the program cover the following topics: Entrepreneurial journey and mindset; Startup teams; Business strategy and innovation; Technological management; Legal frameworks and IP; Marketing and Branding; Finance; Presentation and negotiations; Growth and markets.

Apart from the training program, the entrepreneurs have at their disposal the following facilities: access to a laboratory complex including 11 laboratories, Discoverer supercomputer, Sofia Creation Station Makerspace (workshop to support the creativity of people with ideas for innovative hardware products, businesses and projects), ClubHouse (place for start-up meetings that has a digital studio to record podcasts, product pitches, video content and jury sessions), networking event space for seminars, presentations and conferences, Smart Classroom (pop-up coworking space that facilitates collaboration and peer-to-peer support), Hot desks, Meeting rooms with varying capacity, to ensure their users have a dedicated space for partnership meetings).

What have been the main factors contributing for the success of the best practice?

- SEEIP is the first startup development support program, initiated and implemented by a governmental structure;
- The program design and implementation are realized according to the specificities of the entrepreneurial context in Bulgaria;
- The design of the program allows for optimal use of all existing scientific and technological infrastructure of Sofia Tech Park, depending on the development stage of the startup and its invention;
- SEEIP offers open entry to all individuals, teams and registered entities and being such is completely dedicated to the enhancement of the entrepreneurial capacity of innovators of all ages from the earliest stages of their company's development through











the delivery of training outside their core area of expertise, but of importance for the development and successful management of a newly started business.

What challenges have you faced in the implementation of the best practice and what actions have been taken to address them?

- Gathering of participants of countries from different regions, who play diverse functions in the ecosystem, through the digital incubation, communication and knowledge exchange between participants, mentors, stakeholders, governmental and non-governmental organizations.
- Creation of prerequisites and conditions for mobilization of the full potential of the technology transfer between universities, scientific and research centers and institutes, high-tech companies and businesses, municipalities and regional administrations, through the implementation of innovative formats for networking, sharing best practices and recognition of cross-functional areas of expertise and future development.
- Gathering of starting businesses, developed enterprises, NGO sector and organizations, delivering services for business development, entrepreneurship and business education in a monthly presentation and networking event.
- Development, management and distribution of the entrepreneurial capacity across country regions through mentoriships and trainings of active participants at SEEIP by the alumni-community.
- Promoting the culture of accession to the single European market and the internationalization of Bulgarian business, by offering export services and access to a database of contacts with organizations, organizing B2B meetings.

How can certain aspects of the best practice be improved?

We are expanding partnerships to create synergies between the large number of accelerator and incubation programs by creating collaborations, partnerships and sharing resources, mentors and educational materials, focusing on Sofia Tech Park's ability to provide comprehensive use of the R&D infrastructure (the laboratory complex managed by the Research and Development and Innovations Consortium - RDIC) and consulting/advisory services at every stage of the development of innovative products and services.

Why is it important to study this best practice?

First incubaton programme in the country, which:

- Encompasses wide range activities and services for entrepreneurs and entrepreneurial teams in the earliest stages of their development thought the digital incubation model;
- Allows SMEs to benefit from know-how and mentoring in a remote environment, supporting for the development of local businesses;
- Delivers access to diverse resources, such as physical (offices), IP commercialization (applied researches) and development of scientific capacity, as well as EEN services.











To what extent is the best practice applicable in another setting?

The following features of the program can be replicated in a similar setting:

- Digital educational content;
- Digital incubation approach;
- Digital interaction/communication platform;
- Scientific infrastructure and consultations as a service.

What has been the main impact of the best practice?

- Facilitate better collaboration between incubation and acceleration programs
- Increased number of subscriptions for EEN, therefore increased EU commercialization of Bulgarian companies.
- Participants in the program include wide range of early-stage entrepreneurs- from university students and working professionals, to teams with diverse backgrounds all over the country and abroad.

3.2.2. Spinoff Bulgaria



Brief description

Spinoff Bulgaria is the leading initiative for technology transfer, science-based innovation and university spinoffs. Its main objective is to support the development of a sustainable spinoff ecosystem in Bulgaria, SEE and Europe by connecting national stakeholder with international partners. By presenting best practices, insights and collaboration opportunities, the initiative seeks to stimulate interest in the creation of spinoffs, promote the culture of technology transfer and bring together European organisations, companies, academia and investors.











Their goal for 2030 is to support the development of 100 native spinoffs in Bulgaria, SEE and Europe and become a powerhouse for science-based innovation in Europe. Participation in the initiative is free of charge.

Organisations providing best practice and location

The following organisations are founders of the initiative, which is based in Sofia, Bulgaria:

- Health and Life Sciences Cluster - a professional non-government organisation that was founded to unify the efforts of experts, scientists, practitioners, researchers, academic institutions, start-ups, globally established companies, incubators, technology transfer companies, journalists, marketing and PR experts, who work for the advancement of biotechnology and life sciences field in Bulgaria;

- Artificial Intelligence Cluster Bulgaria - a professional non-governmental organisation committed to building a sustainable ecosystem in the Artificial Intelligence sector;

- Venrize – Spinoff Factory - an innovative company which provides support and services for universities, scientists, existing spinoffs as well as investors and corporations;

- ISTEB.

Websites

https://spinoff.bg/ - Website of Spinoff Bulgaria initiative www.biocluster.bg - Website of Health and Life Sciences Cluster https://www.aicluster.bg – Website of Artificial Intelligence Cluster https://venrize.com/ - Website of Venrize

Duration of best practice

The initiative has been in existence since 2022, with three successful editions organized so far and a fourth one planned to take place in 2025. In the past three years, more than 40 spinoff companies have been presented and awarded.

What is this best practice about?

Annually, Spinoff Bulgaria organizes an international conference which provides a platform for exchanging ideas, know-how, and raising awareness on topics related to technology transfer. The initiative is supported by numerous ministries, municipalities, professional associations and universities. The last edition of the conference featured presentations focusing on investments and funding for innovative companies in Europe, followed by presentations of over 20 technology start-ups as well as practical workshops, panels, and discussions covering different aspects of entrepreneurship, innovation, and investment in spinoff companies. Every year, Spinoff Bulgaria organises awards for recognising the achievements of early-stage academic, university, corporate and government spinoff companies which have successfully implemented innovative technologies and achieved significant market success. The awards provide a unique opportunity for entrepreneurs to raise their company profile and get noticed by potential investors. It increases the visibility of academic, university, corporate and government entrepreneurs and their companies and helps them secure future investment. At the last edition, the organisers also launched a newly formed network designed to support spinoff companies and stakeholders in the Danube region. The initiative called Spinoff Danube













Alliance (SDA) aims to be a central hub where spinoffs, technology transfer experts, and investment organizations from the region can collaborate, exchange best practices, and discuss the latest developments in science-based innovation.

What have been the main factors contributing for the success of the best practice?

The annual Spinoff Awards for early-stage academic, university, corporate and government spinoff companies provide a unique opportunity for entrepreneurs to raise their company profile and get noticed by potential investors. It increases the visibility of academic, university, corporate and government entrepreneurs and their companies and helps them secure future investment.

The organizers accept applications from spinoffs that translate original, high-quality scientific research into products and services that address market problems and make a positive impact on society.

Spinoff Awards focuses on spinoff companies founded on research in life sciences or physical sciences, both of which can include digital technology approaches including artificial intelligence, deep learning, neuromorphic computing, quantum computing, etc.

The organisers encourage applications from anywhere in the world, from applicants of all genders and company positions, including companies in early stages of establishment.

Applications from companies interested to participate in the Spinoff Awards and pitching undergo the following 3-step selection process:

- 1. Submission of application form via the initiative's website;
- 2. Review of the applications by the judges and pitching committee;
- 3. Informing the selected candidates and signing participation contract.

The applications are assessed on the following 7 evaluation criteria:

- Skills of the team, knowledge of the sector, the feasibility of the project;
- The development stage of the product/service;
- Degree of innovation and its defensibility;
- Positioning concerning competitors;
- Consistency with the market and customers' needs and potential outreach;
- The business potential of the idea;
- Completeness of the documentation presented.

The expected results of the project need to be clear, measurable, realistic, bound to a specific period and be a logical consequence of the planned activities.

Only projects that have successfully passed at least the second stage of technological readiness level (TRL) according to the internationally accepted scale for evaluating the maturity of a newly created technology will be evaluated, and work has begun on the third stage - proof of concept in the experimental environment.

What challenges have you faced in the implementation of the best practice and what actions have been taken to address them?

Some of the challenges, faced by the organisers of the initiative, are the relatively small team, the engagement of the staff members in other activities, the lack of dedicated unit responsible for the organisation of events and difficulties related to logistics. This means that the team has to often work on ad-hoc basis and the shortage of staff leads to difficulties in the proper implementation of some activities, such as dissemination of information through the initiative's channels and other organizational issues. The organizers have addressed this difficulty by including volunteers in the organisation of the conference and intend to engage even more













volunteers in the forthcoming editions. Another challenge identified is the difficulty in attracting sponsors for the event. To some extent, this is compensated by the initiative's close cooperation with key partners, including the Ministry of Education and Science, the Fund of Funds, Bulgarian Small and Medium Enterprises Promotion Agency, venture capital funds, accelerators, etc.

How can certain aspects of the best practice be improved?

The organisers have already started working on the preparation and organisation of the next year's edition of the conference, which is scheduled to take place in June 2025. They are exploring the opportunity of extending the duration to make it a week-long event and are considering the option of holding the conference simultaneously at several locations in the country. The organisers are also working towards uniting their efforts with other similar initiatives across the region and Europe. Their aim is to develop a European-wide network of Spinoff Europe, with events organised in several countries on a regular basis.

Why is it important to study this best practice?

Spinoff Bulgaria is the leading initiative for technology transfer, science-based innovation and university spinoffs, with a focus on deep-tech companies. By presenting best practices, insights and collaboration opportunities, the initiative seeks to stimulate interest in the creation of spinoffs, promote the culture of technology transfer and bring together European organisations, companies, academia and investors. Participation in the annual conference and awards are free of charge. The initiative has multi-disciplinarity at its focus, bringing together various actors (scientists, entrepreneurs, investors, policy-makers) from different fields (life sciences, digital technologies, etc), with the main target audience being people with deeptech, science-based products. Another distinctive feature of the initiative is its ethics-oriented approach, with the organisers paying special attention to the ethical consequences of research. Each edition of the conference has its own specific focus. The 1st edition focused on regional opportunities and the link between business and universities. The 2nd edition was dedicated to AI. Health and dual usage of technology were in the focus of the 3rd edition.

To what extent is the best practice applicable in another setting?

This year's edition of the conference marked the launch of a newly formed network designed to support spinoff companies and stakeholders in the Danube region. The initiative called Spinoff Danube Alliance (SDA) aims to be a central hub where spinoffs, technology transfer experts, and investment organizations from the region can collaborate, exchange best practices, and discuss the latest developments in science-based innovation.

The sectoral focus of the initiative will be on ClimateTech and Artificial Intelligence, currently two of the most relevant topics in Europe and on a global level. Next to the initiators and organisers of the Spinoff initiative in Bulgaria, the initiators of the SDA include leading organisations such as Spinoff Austria, VERBUND X, INITS, New Venture Scouting, Vangaivs, and the Austrian Institute of Technology. The initiative is supported by partners like Frauenhofer from Germany as well as by stakeholders from Slovakia, Croatia, and the wider Danube region. The goal of the alliance is to support the development of a sustainable spinoff ecosystem in the Danube region by connecting national frontrunners with international partners. Awareness, knowledge exchange about best practices, and a strong network will be key elements for the development of the sector in the region.











What has been the main impact of the best practice?

In the past three years since the launch of the initiative, more than 40 spinoff companies have been presented and awarded. The number of participants at the annual conferences have progressively increased over the years – from 100 people attending the 1st edition to 300 participants at the 2nd and 3rd editions. So far, the organisers have achieved good progress in the fulfilment of their initial goal to support the development of 100 spin-offs by 2030 and are expecting this number to reach 300.

3.3. Best practices from Spain

3.3.1. Spanish registry of Knowledge Transfer Offices (OTC)



Brief description

The OTC's (until 2022 called Research Results Transfer Offices (OTRI)) were conceived within the First Spanish National R&D Plan 1988-1991 as the mechanism that should serve as a catalyst for relations between the university and the company. The OTC can be defined as the knowledge transfer units of Spanish universities and public research organizations, whose mission is to support and promote the production of knowledge and its transfer to companies and other socioeconomic agents.

In 1996, at the initiative of the General Secretariat of the National Plan, the OTC Registry was created, regulated by the Ministerial Order of February 16, 1996 (BOE of February 23), which expands the concept of OTRI by opening registration in the same to other entities of the national innovation system, such as technology centers, business associations and different types of foundations with activity in R&D management and transfer (information in the OTRI-MICINN registry).











Organisation providing best practice and location

Spanish Ministry of Science, Innovation and Universities (Madrid / Spain).

Websites

https://www.ciencia.gob.es/Innovar/OTC.html https://aplicaciones.ciencia.gob.es/rot/

Duration of best practice

Since 1996.

What is this best practice about?

In universities and Public Research Organizations (OPI), the OTC is the interlocutor with companies and other socioeconomic agents, offering services such as:

- Facilitate collaboration between researchers and companies, identifying the most appropriate experts to meet their needs.
- Promote the catalog of research results available to be transferred to society.
- Support the establishment of contracts and other forms of collaboration between the university or OPI and the company.
- Help find sources of public financing for collaborative activities between university or OPI groups and other entities.
- Manage patents and other forms of R&D protection.
- Assist in activities aimed at the creation of companies based on the exploitation of the knowledge generated at the university or OPI.

It is considered a good practice by the stakeholders consulted due to:

- Establish a clear structure for HEIs TT offices.
- Facilitates the generation of synergies between TT offices by creating a network.
- Facilitates the structuring of this network by creating a centralized registry of these offices.
- Facilitates the identification of policies to favor TT in Spain.

The registry of this office defines:

- Requirements that must be met by entities with knowledge transfer units to achieve registration in the Registry.
- The activities that are considered typical of the transfer of knowledge.
- The registration procedure.
- The obligation to maintain and update your data in the Registry.
- The conditions by which a loss of recognition and cancellation of registration in the Registry.

Among other advantages, these features make it possible:

- Identification of interested parties and contact persons.
- The exchange of experiences and methodologies.
- Standardize certain aspects in contact with the HEis.













Currently there are 111 OTCs registered, belonging to 55 universities, 26 technology centers, 11 health entities, 7 regional R&D organizations, 5 state R&D organizations and 7 other types of entities.

What have been the main factors contributing for the success of the best practice?

The Registry of Knowledge Transfer Offices in Spain is primarily an administrative tool to certify and regulate the operation of transfer offices in universities and research centers. It plays an important role in organizing and standardizing the national knowledge transfer ecosystem.

The registration process consists of:

- Application Submission: The Knowledge Transfer Office (KTO) submits a formal application to the relevant regulatory body, typically under the Ministry of Science and Innovation or regional governments.
- Required Documentation: Offices must provide evidence of their legal status and operations, including:
- Bylaws and official regulations.
- Reports detailing their transfer activities (e.g. intellectual property management, licensing, spin-off creation).
- Proof of adequate resources (personal, infrastructure, funding).
- Administrative Evaluation: Regulatory authorities review the application to verify compliance with legal and operational criteria.
- Certification: If the office meets the requirements, it is officially registered and certified as a recognized Knowledge Transfer Office.

This process ensures a standardized and transparent system but focuses more on legal compliance than fostering innovation or evaluating performance outcomes.

This structure is combined with others such as RedOTRI. The RedOTRI (Network of Technology Transfer Offices) in Spain is often highlighted as a well-structured and collaborative model for promoting knowledge and technology transfer between universities, research centers, and businesses.

What challenges have you faced in the implementation of the best practice and what actions have been taken to address them?

The centralized registration model also has certain disadvantages:

- Focus on Compliance, Not Outcomes: Prioritizes legal and administrative criteria over the quality and impact of technology transfer activities, potentially leading to a more bureaucratic approach.
- Administrative Burden: Registration and compliance processes can be timeconsuming, diverting resources from productive activities, especially for smaller offices.
- Lack of Incentives for Improvement: The registry does not include mechanisms to
 encourage innovation or reward high-performing offices.
- Inequality in the Ecosystem: Resource-rich offices can easily comply, while smaller or newer ones may face barriers, limiting their participation in the system.









It is for this reason that it is important to ignore the need to combine it with RedOTRI.

How can certain aspects of the best practice be improved?

In Spain, the OTC Registry provides clear benefits in terms of transparency, regulation, and standardization, which are essential for strengthening the knowledge transfer ecosystem.

However, to maximize its impact, it should be complemented with mechanisms that:

- Assess the performance and outcomes of registered offices.
- Provide incentives to enhance the quality and impact of technology transfer.
- Simplify administrative processes to avoid unnecessary bureaucracy.

Why is it important to study this best practice?

The centralized registration system presents different advantages that make it a system to be analysed and considered by other governments:

- Standardization: Ensures that all Knowledge Transfer Offices (OTCs) meet minimum legal and operational standards, promoting consistency and quality across the system.
- Mapping the Ecosystem: Provides an official registry of active offices, aiding strategic planning and resource allocation by public administrations.
- Transparency and Trust: Builds confidence among external stakeholders (e.g. companies, investors) by certifying compliance with legal and operational requirements.
- Policy Support: Offers reliable data on OTCs, facilitating the development of bettertargeted public policies and programs.
- Alignment with National Strategies: Reinforces adherence to national laws and strategies, such as Spain's Science, Technology, and Innovation Law.

To what extent is the best practice applicable in another setting?

A centralized registry of Knowledge Transfer Offices (OTC), such as the one that exists in Spain, is not a model widely replicated globally. However, some countries have similar mechanisms to identify, regulate or monitor technology transfer offices, although with important differences in their objectives and approaches.

The model can therefore be partially or totally replicated by other countries with similar interests.

What has been the main impact of the best practice?

The OTC Registry in Spain has significantly impacted the knowledge and technology transfer ecosystem, structuring and formalizing the activities of Transfer Offices (OTCs). This has marked a clear difference compared to the situation before its implementation.

Before the OTC Registry in Spain:











- Fragmented Ecosystem: There were various OTCs operating inconsistently, with no unified framework or common standards. Many OTCs lacked a formal structure or sufficient resources, hindering their effectiveness.
- Lack of Supervision and Transparency: There was no clear mechanism to track how many OTCs existed, their activities, or their performance. Public administrations had limited data for designing targeted support policies.
- Inequality in Resources and Capabilities: Larger, better-funded offices performed well, while others struggled to remain operational. There were no minimum standards, limiting the quality and scope of technology transfer.
- Limited Collaboration: Although RedOTRI existed, many OTCs were not connected or lacked incentives to collaborate.

3.3.2. Cervera Technology Transfer R&D Projects for Technology Centers



Convocatoria Proyectos de I+D de Transferencia Tecnológica Cervera



Brief description

The purpose of this program is to strengthen the technological centers that develop applied research in Spain, as well as their driving role in the entire Spanish System of Science, Technology and Innovation.

In particular, the aim is to strengthen the capabilities of these centers in strategic technologies (Cervera priority technologies) through networking, as well as to promote their ability to collaborate with different agents, especially companies, in these technologies.

Website

https://www.cdti.es/ayudas/ayudas-cervera-para-centros-tecnologicos











Duration of best practice

Since 2018.

What is this best practice about?

The program offers financing to innovation projects that collaborate with technology centers. The creation of financing mechanisms that require collaboration with technology centers or universities facilitates the transfer of technology with the industry. At the same time, it focuses these centers on the technologies on which research should focus.

The objective of the program is strengthening the innovation capabilities of SMEs and mid-cap companies, through the contracting of R&D activities to knowledge-generating centers or the execution of R&D projects in collaboration with these entities, in some of the priority technologies "Cervera."

Priority technologies "Cervera":

- Advanced materials;
- Circular economy;
- Energy transition;
- Smart manufacturing;
- Health technologies;
- Safe and healthy food chain;
- Deep learning and Artificial Intelligence;
- Advanced mobile networks;
- Smart transportation;
- Information protection;
- Quantum computing.

Help Tool Features

- Financing of the activities necessary to achieve the objectives established in the strategic R&D&I programs presented by the beneficiaries.
- Subsidies up to 100% of the strategic program presented by the group.
- The carrying out of economic activities will not be subject to aid.
- Obtaining the aid will entail the accreditation of the beneficiary as a "Cervera Center of Excellence".

The budget for the 2023 (program specific for technology centers) call was €40M.

What have been the main factors contributing for the success of the best practice?

The successful development of the Cervera Program for technological centers in Spain is based on a combination of strategic design, collaborative efforts, and targeted funding mechanisms. The process and methods used to ensure its effectiveness involve several key steps:

• Strategic Alignment with National and European Goals: The Cervera Program was designed to align with Spain's national innovation strategy and European Union technological priorities. It focuses on sectors like advanced materials, energy transition, artificial intelligence, and smart manufacturing. This strategic alignment











ensures that the program addresses urgent technological needs and supports Spain's broader innovation goals.

- Public-Private Collaboration: By fostering partnerships between technological centers and private companies, the program aims to bridge the gap between scientific research and market application.
- Group Collaboration of Technological Centers: To apply for funding, groups of 3 to 5 technological centers must collaborate on research projects. This collaborative approach not only increases the potential for impactful innovations but also strengthens the research capabilities of smaller centers that might lack the resources to conduct large-scale R&D independently.
- Funding Mechanisms: The Cervera Program offers both grants and partially repayable loans for eligible projects. Up to 100% of the approved project costs can be covered, with a mix of non-repayable funding for some activities and loans for others. This financial support helps both technological centers and SMEs overcome barriers related to technical and financial resources.
- Strong Evaluation and Monitoring: The process for awarding funding under the Cervera Program involves rigorous evaluation to ensure that the projects align with the program's objectives and meet the necessary scientific and market criteria.
- Long-Term Support: By focusing on multi-year strategic R&D programs (typically lasting 3 years), the Cervera Program aims to foster sustained innovation. This longer-term perspective allows projects to evolve and integrate into broader technological advancements, benefiting from a continuous flow of public and private sector collaboration.

In summary, the Cervera Program's success lies in its strategic planning, robust public-private partnerships, collaborative project structure, tailored financial support, and ongoing oversight to ensure impactful results.

What challenges have you faced in the implementation of the best practice and what actions have been taken to address them?

The Cervera Program in Spain offers several advantages but also presents key disadvantages.

- Bureaucratic complexity can make the application process difficult, especially for smaller technological centers with limited administrative resources. Larger, well-established centers may have an advantage in securing funding, creating potential disparities within the ecosystem.
- The program's focus on large consortiums (3-5 centers) may leave smaller projects underfunded or excluded.
- Furthermore, over-reliance on public funding could create dependency, rather than fostering sustainable, private-sector-driven innovation.
- The program also limits funding to specific priority technological areas, potentially sidelining other innovative fields.
- Finally, the private sector's lower investment in R&D compared to other European countries poses a challenge to the program's success, as collaboration between public and private entities is essential for innovation.











How can certain aspects of the best practice be improved?

To improve the Cervera Program, several adjustments could be made:

- Simplify Bureaucratic Processes: Streamlining application procedures and reducing paperwork would make it easier for smaller centers and companies to participate, improving access to funding across the ecosystem.
- Support Smaller Projects: While the program encourages large consortia, smaller technological centers or niche projects could be better supported through tailored funding opportunities or smaller-scale collaborations.
- Encourage Private Sector Investment: Increasing incentives for private companies to invest in R&D, such as tax breaks or matching funds, could strengthen public-private collaboration and reduce dependency on public funding.
- Broaden Technological Focus: Expanding the range of supported technological areas would allow more diverse fields to benefit from the program, fostering innovation across a wider spectrum of industries.
- Foster Long-Term Sustainability: Introducing mechanisms that encourage selfsufficiency, such as commercialization assistance or venture funding, could help companies transition from relying on government funding to building sustainable revenue streams.

These improvements would enhance the program's inclusivity, impact, and sustainability.

Why is it important to study this best practice?

The key takeaways for someone studying should focus on:

- Public-Private Collaboration: Understanding the importance of fostering partnerships between technological centers and private companies is crucial.
- Funding Mechanisms: A deep dive into how the Cervera Program allocates financial resources—combining grants and repayable loans—can provide insights into how funding models can drive innovation. Analyzing the balance between public funding and private investment is an important area of study.
- Technological Focus Areas: The program prioritizes sectors like artificial intelligence, smart manufacturing, and energy transition. Studying these areas can highlight emerging technological trends and how strategic R&D can support national and European goals.

To what extent is the best practice applicable in another setting?

While the Cervera Program offers valuable lessons in promoting innovation, its applicability in other settings would require adjustments based on the local political, economic, and industrial landscape.

What has been the main impact of the best practice?

The Cervera Program in Spain has demonstrated significant impact, particularly in technological and economic terms. For every euro invested in the program's initial calls, an additional €7.2 was generated in value. Additionally, 85% of the total funds allocated in these calls, amounting to €74 million, were raised by Technology Centers. This has led to the engagement of over 2,000 full-time equivalent (FTE) researchers, enhancing technological













development across multiple sectors, such as energy, cybersecurity, and advanced manufacturing.

In terms of intellectual property, centers involved in the program have produced over 120 scientific publications and 8 patents, indicating significant innovation. The program has also catalyzed collaboration among centers, facilitating the development of spin-offs and new R&D projects.

Overall, the Cervera Program has contributed to strengthening Spain's innovation ecosystem, providing financial and research support to SMEs and mid-sized companies, enhancing technological capacities, and promoting economic growth through technology transfer.

3.4. Best practices from Slovakia

3.4.1. Transfer of rights carried out by Technology and Innovation Park of the Pavol Jozef Šafárik University in Košice and its TTC



Brief description

Academy-Industry Collaboration between the Pavol Jozef Šafárik University in Košice (Technology and Innovation Park of the Pavol Jozef Šafárik University in Košice), Comenius University in Bratislava, Masaryk University in Brno and the Czech holding group FABA Capital. The cross-border cooperation between three universities and one start-up has brought significant success in the field of technology transfer to the Pavol Jozef Šafárik University in Košice at the end of 2022. The concluded intellectual property transfer agreement will bring a new technology closer to practice.

Successful technology transfer of the MicroRNA test of the success of the IVF (in vitro fertilization) process and diagnostics of a quality embryo for IVF. Technology transfer that can











contribute to the **success of assisted reproduction by the IVF method. Innovative technology consists in the non-inva**sive collection of biological material without any damage to the embryo, by analyzing isolated miRNA molecules from the culture medium as new biomarkers. Molecules are thus able to help in personalized medicine in predicting the success of IVF through the selection of a suitable embryo.

Organisation providing best practice and location

Pavol Jozef Šafárik University in Košice, Technology and Innovation Park of the Pavol Jozef Šafárik University in Košice.

Website

https://www.upjs.sk/aktuality/univerzita-pavla-jozefa-safarika-v-kosiciach-umoznilauspesnejsie-riesenie-neplodnosti-vdaka-patentu-k-novej-technologii/ https://patlib.cvtisr.sk/buxus/generate_page.php?page_id=2800

Duration of best practice

Since 2019. The Technology Transfer Center at CVTI SR entered the process in the fall of 2019, when it delivered an evaluation report and research on the state of the art to the Pavol Jozef Šafárik University in Košice. The Slovak patent application was submitted to the Industrial Property Office in March 2020. In 2021 the patent attorney filed an international PCT application (on the basis of the Patent Cooperation Treaty). The sign of the contract on the transfer of IP to the start-up FETUS, IVF occurred on December 20, 2022 between the four contracting parties.

What is this best practice about?

Successful technological transfer and close cooperation with the commercial and legal department at the Technology and Innovation Park of the Pavol Jozef Šafárik University in Košice. Professionally provided commercialization process.

The new technology, protected by a patent application, identifies new microRNA (miRNA) molecules that can be used in prediction. Simply put, the identified molecules predict the women's current readiness and the quality of the embryo suitable for the artificial insemination process.

The importance of the invention is underlined by its nomination for the Technology Transfer Award in Slovakia in 2021, in the Innovation category, and finally, the transformation of the nomination into the victory of the MicroRNA test for the success of the IVF process and diagnostics in its category.

As part of the commercialization of academic and university projects, a new fabaincube incubator was created for other similar projects.

What have been the main factors contributing for the success of the best practice?

Three universities, one investor, services and coordination from the CTT CVTI SR are behind the success in the field of technology transfer.













CTT CVTI SR entered the process in the fall of 2019, when it delivered an evaluation report and state-of-the-art research to Pavol Jozef Šafárik University in Košice. The next step in the process of successful technology transfer was the filing of a patent application.

The concluded intellectual property transfer agreement will bring a new technology closer to practice.

The research of two Slovak and one Czech university and the subsequent entry of the holding company FABA Capital bring into practice a new technology that can contribute to the success of assisted reproduction by the IVF method. The task of the start-up, which is part of the FABA Capital group, is now the commercialization of the IVF embryo transfer project. FABA invested 441 000 EUR in the startup. The investment includes the transfer of intellectual property rights to the newly established startup Fetus with scientific teams from universities in Bratislava, Košice and Brno.

What challenges have you faced in the implementation of the best practice and what actions have been taken to address them?

The challenge is in combination of molecular methods with the use of artificial intelligence in biomedicine, to bring better healthcare as well as a higher quality of life for everyone, not just infertile couples.

The challenge was determining the value of this solution for the purposes of concluding the contract. An expert determined the general value of the invention. This was then used to determine the value of the final contract between the universities and the financial holding.

How can certain aspects of the best practice be improved?

Certain aspects of the best practice can be improved by inviting other specialists to the research group with experience in the field of study and high-capacity analyzes of miRNA molecules in clinical material.

Why is it important to study this best practice?

Because it's a breakthrough in the field of intellectual property commercialization. This is the first ever successful transfer of intellectual property within Slovak universities that we have information about, and CTT CVTI SR significantly contributed to its implementation.

The professional technology transfer departments of all three universities involved played an irreplaceable role in the entire process.

Based on a detailed assessment of the invention and its potential for commercial use by experts from CTT CVTI SR, was recommended offering a license to use the invention to reproductive centers. They also provided support to Slovak universities in obtaining patent protection with the aim of subsequently selling the invention in question."

To what extent is the best practice applicable in another setting?

This best practice is highly applicable in other academic and institutional settings, especially where there is a need to strengthen the cooperation between the research and industry.













What has been the main impact of the best practice?

The main impact of this best practice is in bringing into practice a new technology that can contribute to the success of assisted reproduction using the IVF method.

3.4.2. Technology transfer implemented at the Slovak University of Technology in Bratislava



Brief description

Academy-Industry collaboration between Faculty of Chemical and Food Technology of the (FCHTP) Slovak University of Technology in Bratislava, Polymer Institute of the Slovak Academy of Science and the commercial company PANARA.

First Slovak bioplastic Nonoilen, which represents a 100% ecological solution in the field of biodegradable plastics. Nonoilen was created by Slovak scientists as part of PANARA cooperation with the scientific team from the Faculty of Chemical and Food Technology of STU in Bratislava and is protected by Slovak and international patent protection. The material was not only created, but is also commercially used.













Organisation providing best practice and location

Slovak University of Technology in Bratislava (STU), Faculty of Chemical and Food Technology (FCHTP).

Website

https://www.fchpt.stuba.sk/sk/diani-na-fchpt/aktuality/nonoilen-unikatny-ekologickybioplast.html?page_id=4340

Duration of best practice

Since 2011. The first invention application for this type of bioplastic was submitted in 2011.

What is this best practice about?

PANARA cooperation with the scientific team from the Faculty of Chemical and Food Technology of STU in Bratislava.

Nonoilen is the result of R&D collaboration between scientists from the Slovak Technical University in Bratislava (Faculty of Chemical and Food Technology) and private company PANARA. The goal of both parties is to produce bioplastics with a wide range of practical uses.

Contractually sealed long-term cooperation between FCHPT and the commercial company PANARA is an example of "the best practice". In the field of bioplastics, the faculty used its scientific potential, in which it is supported technically and economically by PANARA, which, on the other hand, as a representative of the business sphere, knows how to create suitable conditions for applied development supported by the faculty and the implementation of research into the industrial production.

Thanks to mutual support, not only was it created, but it is also used commercially. Nonoilen was tested and put into practice on a pilot basis in several Slovak and foreign companies.

The idea of entering the market with a material that would have the properties of Nonoilen was introduced to academia by Pavol Alexy, a young engineer in the 1990s. Later, the knowledge and experience of a by then professor Alexy were combined with the risk tolerance of PANARA, which provided the university research with necessary conditions, and also actively took part in a significant portion of the research. Their synergy and enthusiasm for finding the possibilities to create and especially bring to market a truly ecological bioplastic have united into the Nonoilen granulate we have today.

What have been the main factors contributing for the success of the best practice?

Long-term cooperation between academic sector (FCHPT) and commercial sector (PANARA).

The Slovak University of Technology is collaborating with the Brno University of Technology in Czechia. The scientists there, together with a commercial company, have developed a technology specifically for processing waste oils into polyhydroxybutyrate.













In the field of bioplastics FCHTP use its scientific potential, in which it is technically and economically supported by PANARA, which, on the other hand, as a representative of the business sphere, is able to create suitable conditions for applied development supported by the faculty and the implementation of research into industrial production.

The authors of this invention gave a license to the Nitra-based company PANARA, which focuses on the development and production of ecological plastics.

What challenges have you faced in the implementation of the best practice and what actions have been taken to address them?

From the point of view of the application use of Nonoilen, the faculty (FCHTP) has definitively developed recipes for packaging films from the first generation, and the second generation is practically complete, where only is needed to verify production under industrial conditions.

The STU team is also working intensively with companies and universities to find ways to use the invention in practice. One way is through mass commercial use in cooperation with manufacturers of plastic containers, cutlery, packaging films, or mulch films, which are used in agriculture to maintain moisture and prevent weed growth. The second path is original applications in the field of design and fashion. Here, chemists collaborate with designers from the crafting plastics studio. The third way for use is medical applications. Here, the STU team is collaborating with the Faculty of Medicine of Comenius University in Bratislava and top implant development experts from the Technical University of Košice. Bioplastics can be used as temporary implants for treating complicated fractures.

On the open market, 100% bioplastic cannot compete with the production price of supercheap plastic made from petroleum today.

How can certain aspects of the best practice be improved?

Certain aspects of the best practice can be improved by enforcing the preference for the production of 100% bioplastics over classic plastics made from oil through clear legislative rules.

Why is it important to study this best practice?

Because it is important to work systematically on the most ecological solutions in the field of polymers and thus improve the ecological situation and the environment.

To what extent is the best practice applicable in another setting?

This best practice is highly applicable in other academic and private sector settings, especially where there is a need to strengthen the cooperation between research and industry. It creates opportunities for introduction of new progressive materials that are environmentally more sustainable.













What has been the main impact of the best practice?

The main impact is that research activities, predominantly carried out by the team of FCHTP, were completed by submitting an application for an invention, which was awarded at the prestigious international fair of inventions and technologies.

3.5. Best practices from Slovenia

3.5.1. Company visits of Jožef Stefan Institute



Brief description

The Jožef Stefan Institute (JSI) has a long-standing tradition of collaborating with industry, with one of its primary goals being the transfer of knowledge to society. While collaboration with companies occurs across various JSI departments, it is also centrally supported by the Knowledge Transfer Office (KTO). The KTO conducts visits to Slovenian companies, aiming to identify their technological needs and address them through R&D collaboration. When a company's technology requirements align with the solutions proposed by JSI researchers, additional meetings are organized, with the goal of fostering long-term R&D partnerships. The KTO serves as a bridge between the "two worlds" of research and business, offering a well-structured approach that replaces sporadic, one-time interactions with a continuous process of R&D collaboration.

Organisation providing best practice and location

Jožef Stefan Institute (JSI), Slovenia.

Website

Contractual Collaboration with Industry: http://tehnologije.ijs.si/en/?page_id=3121

Success stories – Cooperation between researchers and companies: http://tehnologije.ijs.si/en/?page_id=11802











Duration of best practice

Since 1996.

What is this best practice about?

Each quarter, the KTO colleagues responsible for industrial liaison identify Slovenian companies that could benefit from collaborating with JSI researchers. The selection is based primarily on the companies' activities, production capabilities, and whether they have a product—tangible or intangible (e.g., software)—as well as the assumption or evidence that they have in-house development capabilities. This criterion is crucial for identifying potential collaboration topics between JSI and the company. Additionally, it's important that the companies are financially capable of supporting such collaboration, which is assessed by reviewing their publicly available financial statements.

After identifying these companies, the KTO colleagues responsible for industrial liaison contact them and arrange introductory meetings. At the first meeting, usually one KTO representative responsible for industrial liaison and one representative responsible for technology transfer attend the meeting. During the meeting, we aim to identify challenges the company is facing that they have not been able to resolve internally. These challenges are then communicated to Tech Transfer (TT) coordinators at JSI, who pass them on to the relevant researchers. If JSI researchers believe they can provide a solution and are interested in collaborating, they inform the KTO, and we organize a joint meeting. Approximately half of these companies proceed to a second meeting. The company can either fund the solution's development themselves or collaborate with the researchers to apply for a grant.

What have been the main factors contributing for the success of the best practice?

The Knowledge Transfer Office (KTO) at the Jožef Stefan Institute (JSI) in Slovenia has developed a structured program of company visits to bridge the gap between research and industry and to foster trust and collaboration between researchers and businesses. The three phases of the program:

1. Initial Engagement: KTO representatives initiate contact with companies to arrange meetings aimed at identifying potential areas for cooperation. Annually, the KTO conducts approximately 40 to 50 of these initial visits, typically involving experts in both company collaboration and technology/intellectual property.

2. Solution Development: Following the initial meeting, the KTO collaborates with JSI researchers to identify suitable technologies and expertise that address the company's specific challenges defined in the first phase. This stage may include further meetings and detailed discussions to propose the value of the JSI's project or technology to the company and to specify concrete approaches, milestones, and deliverables in the development of tailored solutions.

3. Formalizing Collaboration: The KTO assists in defining the terms of cooperation, which may involve negotiating collaboration terms, service pricing or project budgeting, intellectual property rights, drafting non-disclosure agreements, and securing appropriate funding. Support is provided through various co-funding sources, including EU projects and national schemes.











We offer business entities different forms of collaboration with the Institute, i.e., Contractual Cooperation, Internationalization through EEN, Licencing JSI Patents and Technologies, Research infrastructure at JSI, Services of the Patlib Center and Digital Innovation Hub (DIH JSI). For an easier overview of potential thematic fields where collaboration is possible, we offer companies a list of JSI technology offers.

What challenges have you faced in the implementation of best practice and what actions have been taken to address them?

A constant challenge is searching for new companies, having a good overview of the situation in industry, understanding its needs and being up to date with economic and scientific trends.

How can certain aspects of the best practice be improved?

At JSI, new innovations are daily burst out, therefore it is especially important to promptly follow the latest developments and innovative technologies in close contact with researchers, to be able to offer up-to-date innovations to companies.

Why is it important to study this best practice?

Key takeaways:

- Proactive Engagement: Initiating contact with companies is crucial for uncovering potential collaborations.

- Tailored Solutions: Aligning research capabilities with industry needs ensures effective technology transfer.

- Comprehensive Support: Providing assistance in legal, financial, and technical aspects facilitates smoother partnerships.

The KTO's company visit program exemplifies a proactive approach to technology transfer, effectively connecting scientific research with industry applications.

To what extent is the best practice applicable in another setting?

The mechanism of company visits is applicable in any regional or national setting, where innovations systematically grow up and require an efficient supporting mechanism to commercialize them.

What has been the main impact of best practice?

Since its launch in 1996, the KTO has conducted over 300 initial company visits, leading to numerous collaborative projects and the successful transfer of technologies to the market. The mechanism of company visits proved to be an efficient approach to contact companies as well as to open opportunities for initiating long-term collaborations with companies. Throughout the years a comprehensive list of companies has been created which serves as a good database for various purposes to strengthen Slovenian innovation ecosystem.

At the Industrial Forum IRT 2023, the company MAHLE Electric Drives Slovenija d.o.o. and Jožef Stefan Institute received the TARAS award for successful cooperation between industry and academia. The subject of cooperation was the design of an electric motor for steering systems













in vehicles. The goal was to determine its geometry and material properties such that the technical requirements are met and the cost minimized. We arrived at the solution through an innovative simulation-optimization process that includes the statistical evaluation of solutions considering deviations in the manufacture of the engine. The result is an advanced cost-effective engine that substantially improves the company's competitiveness on the market. The cooperation was initiated by the Center for Technology Transfer and Innovation in 2022, and the project was carried out by the Intelligent Systems Department (Bogdan Filipič, Tea Tušar, Aljoša Vodopija and Jordan Cork) and the Computer Systems Department (Peter Korošec).

3.5.2. International Technology Transfer Conference



TOBER 2024	ENCE, 9TH & 11TH OF OG	SFER CONFER	HNOLOGY TRAN	IONAL TE	17TH INTERNAT
EGISTRATION	PROGRAMME R	VENUE	OBJECTIVES	ZATION	ORGANI
ARCHIVE	SCIENTIFIC PROJECTS	SUCCESSFUL	R PAPERS	CALL F	AWARDS ~
OTO GALLERY	ITTC17 PH				

17th International Technology Transfer Conference 9th and 11th of October 2024





Brief description

The annual International Technology Transfer Conference (ITTC) aims to promote knowledge exchange between academia and industry, in order to strengthen the cooperation and transfer of innovations from research labs into industrial exploitation. Our goal is also to further strengthen the knowledge base and experiences of technology transfer professionals at public research organisations.

The conference engages a diverse range of key stakeholders, including public research organizations as sources of knowledge, technology parks providing infrastructure, business accelerators, intellectual property offices, IP attorneys, various agencies and consultants, as well as financial entities like venture capital firms, business angels, and development banks.













Additionally, medium-sized enterprises, international corporations, private innovators, and others play a crucial role. These stakeholders collaboratively shape the conference, sharing their knowledge, expertise, and insights with co-organizers, partners, and audiences.

Two central features of the ITTC are the presentations of research papers on the topic of the conference and its annual pitch competition for the best innovation from public research organisations.

The conference also includes a dedicated session where researchers, backed by the Slovenian Research Agency (ARIS), showcase their latest work, offering businesses a window into emerging opportunities for development.

Organisation providing best practice and location

Jožef Stefan Institute, Ljubljana.

Website

https://ittc.ijs.si/

Duration of best practice

Every year since 2008.

What is this best practice about?

The morning session of ITTC is dedicated to presentations and round tables on different topics pertaining to technology transfer within the wider national and international ecosystem, featuring international policy makers, technology transfer experts, and higher education and research organisation representatives.

Following the morning session is an international pitch competition for best innovation with commercial potential. This competition is designed to encourage research teams to develop and present business models for their innovative technologies in front of an international committee. In the two months leading to the conference, participants receive structured training that includes workshops, consultations, and pitch rehearsals, which help them refine their business models and presentations. This hands-on approach is crucial for bridging the gap between research and commercialization, providing researchers with the skills and confidence needed to attract investors and business partners.

The afternoon session consists of two parallel sessions. During one of them, experts in technology transfer, intellectual property rights, industry-collaborating researchers, and others present their peer-reviewed papers on the following topics:

- Self-evaluation of research organizations
- Open innovation
- Criteria for valuation of IP
- Establishing a strategy for the efficient management of intellectual assets
- Managing intellectual assets in joint research and innovation activities













• From intellectual assets creation to the market

• Key factors for successful technology transfer from different points of view (researchers, knowledge transfer experts, enterprises)

- The role of TTOs in maximizing impact of science, technology and innovation on society
- Examples of IP protection in Artificial Intelligence
- Other, chosen by the contributor

Alongside the paper presentations, a parallel session focuses on different collaboration opportunities between secondary education institutions and academia, as well as showcases outstanding ARIS-funded research projects.

Finally, two World Intellectual Property Organisation (WIPO) awards are presented. The WIPO National Award for Inventors is presented to a researcher whose inventions significantly contributed to national wealth and development, while the WIPO National Award for Enterprises is awarded to a company that constantly and strategically employs the intellectual property system in its operations.

What have been the main factors contributing for the success of the best practice?

The International Technology Transfer Conference (ITTC) has been serving as a significant and efficient platform for promoting the importance of knowledge exchange between academia and industry in Slovenia for over 15 years, to strengthen the cooperation and transfer of innovations from research labs into industrial exploitation.

A hallmark of the conference is the "**Best Innovation with Commercial Potential" pitch competition**, where researchers present their technologies to an international expert panel. Winners receive recognition and financial support, such as the €2,500 prize awarded in recent years.

The ITTC also features keynote speeches, roundtable discussions, and paper presentations on technology transfer and intellectual property, fostering knowledge exchange and strengthening the innovation ecosystem. By integrating these elements, the ITTC effectively bridges the gap between research and market application, contributing significantly to technological advancement and economic growth.

WIPO national award for enterprises is granted to stimulate Slovenian enterprises to intensify their cooperation with public research organisations. It aims to expose as a good practice those enterprises that are constantly and methodologically using the IP system in their business activities.

WIPO National Award for Inventors aims to award inventive and innovative activity of Slovenian public researchers and to recognize their contribution to national wealth and development.

What challenges have you faced in the implementation of the best practice and what actions have been taken to address them?

Financing: no stable source of financial support, it requires constant search for funding.











Competitiveness: since launching the conference several events appeared based on the same model which requires constant development of the content and organization (recognized speakers, up-to-date topics).

Scientific excellence: peer-reviewed contributions from researchers specializing in knowledge and technology transfer.

How can certain aspects of the best practice be improved?

Based on experience at the 17 ITTC in 2024 when the innovation ecosystem in USA has been presented by the University of Colorado Boulder, several other most successful and efficient ecosystems in the world can be introduced each year at the conference.

Why is it important to study this best practice?

The organization of the first International Technology Transfer Conference (ITTC) with the support of international partners in 2008 has been one of the important milestones which paved the way for establishing the technology transfer unit at JSI. Throughout the years the organization of ITTC helped to develop professional technology transfer services based on the experience of partners with longer tradition and belonging to strong innovation ecosystems, such as in the USA and western Europe, and to raise the awareness of the government and its agencies (as the public funding providers) and scientific community and industry (as the beneficiaries) of the importance of having in place a professional and financially sustainable technology transfer process as an important part of the national innovation ecosystem.

ITTC offers an efficient mechanism for raising awareness of intellectual property rights (IPR) and IP management, motivating researchers for commercialization of their innovations, making bridges among different stakeholders of Slovenian innovation ecosystem.

To what extent is the best practice applicable in another setting?

Encouraged by the model of the ITTC, launched by JSI in 2008 as the first event of this kind in Slovenia addressing innovations and technology transfer, some other events have boosted up since then, for example the UNI.MINDS science and innovation festival taking place for the last five years.

What has been the main impact of best practice?

The ITTC has established itself as a crucial platform for exchanging ideas and fostering collaboration between domestic and international stakeholders, significantly contributing to the development of Slovenia's national innovation ecosystem. The conference has been instrumental in helping Slovenian public research organizations address challenges such as securing funding for spinouts, updating national legislation on research and innovation, and building robust consortia for KTOs.

The "Best Innovation with Commercial Potential" pitch competition encourages the commercialization of inventive technologies developed at public research organizations, often leading to the establishment of spin-off companies or the licensing of technologies. Since 2009, the entrepreneurial pitch competition for research teams and their inventions, evaluated













by international teams of commercialization and investment experts, has remained a key feature, supporting over 100 research teams in developing business models, with more than 30 winners recognized to date.

3.6. Best practices from Croatia

3.6.1. Project and Technology Office of Faculty of Transport and Traffic Sciences, University of Zagreb



Brief description

The Faculty of Transport and Traffic Sciences, through its Project and Technology Office, implements high-quality incentive programs for technology transfer. The Office is involved in all activities related to cooperation with industry and the transfer of scientific knowledge to the industry. A good example of promoting technology transfer is through the Faculty's foundation. Additionally, the Faculty creates preconditions for technology transfer through its Economic Council. The Economic Council of the Faculty of Transport and Traffic Sciences is an advisory body of the Faculty, composed of members who are representatives of reputable institutions and companies from industries relevant to the Faculty's activities.

Organisation providing best practice and location

Faculty of Transport and Traffic Sciences, Zagreb.

Website

https://www.fpz.unizg.hr/zaklada/











Duration of best practice

The Project and Technology Transfer Office and Economic Council were established in 2015. The foundation was established in 2019.

What is this best practice about?

The best practice is about the establishment of an Office within the Faculty that provides support to all other faculty bodies in all activities directly or indirectly related to technology transfer. The foundation is a good example, closely connected to the Office. The Foundation was established with the goal of providing the necessary funds for doctoral research at the Faculty, establishing a system of competitions, selection, and funding of research topics. The Office manages the processes of internal competitions, criteria, idea selection, etc. One of the main criteria for selecting topics is the applicability of the doctoral candidate's research to the industry.

By encouraging and financially supporting doctoral scientific research and creating conditions that allow it to be conducted in the industry, the Faculty aims to enhance the collaboration between the academic community and the business sector.

The Faculty's Economic Council is another example of good practice within the Faculty. Indirectly, the Economic Council influences the creation of experts who will be capable of conducting research suitable for technology transfer to the industry. Founded in 2015, the Economic Council consists of companies from Croatia's transport and logistics sectors, with the aim of advancing cooperation between the Faculty and the business community.

The Council plays a key role in improving the Faculty's work and positioning it as a leading institution in the fields of transport and logistics in Croatia.

Members of the Economic Council actively participate in shaping the Faculty's study programs, determining the industry's needs, and advising on topics for final and graduate theses, as well as doctoral research.

Through initiatives like the Faculty's foundation and the involvement of the Economic Council, the Faculty strives to create a stronger bond between research, education, and industry needs.

What have been the main factors contributing for the success of the best practice?

The success of the best practice at the Faculty of Transport and Traffic Sciences is primarily attributed to a few key factors. First, the establishment of the Office for Projects and Technology Transfer has played a crucial role, as it provides centralized support for all activities related to technology transfer within the Faculty. This office ensures that both internal and external collaboration runs smoothly, connecting academic research with industry needs.

Second, the strong integration of the Faculty's foundation into this system provides essential funding for doctoral research, fostering innovation and ensuring that research topics are aligned with industry applicability. The clear criteria for selecting research projects, focused on their potential for technology transfer, is another factor driving success.

Finally, the Economic Council serves as a bridge between academia and industry, involving business leaders in shaping study programs, research topics, and internships. This collaboration ensures that the Faculty produces experts capable of conducting research that can be directly applied in industrial contexts, which significantly enhances the success of technology transfer initiatives.











What challenges have you faced in the implementation of the best practice and what actions have been taken to address them?

The biggest challenge in establishing the Office for Projects and Technology Transfer was the difficulty in keeping track of all professional and scientific projects. Initially, the Office relied heavily on paper-based administration, which was time-consuming and inefficient. This issue was resolved by developing a faculty-wide application for managing all professional and scientific projects. The introduction of this digital platform significantly streamlined procedures in the Office, allowing staff to focus on more creative and strategic tasks.

Regarding the foundation, the initial challenge was securing funding. However, this issue was quickly resolved through the support of companies that were already collaborating with the Faculty. These companies made donations, motivated by the belief that the projects funded through the foundation could also benefit their own business operations in the future.

How can certain aspects of the best practice be improved?

Certain aspects of the best practice can be improved by hiring new staff, as well as through the education and training of both new and existing personnel. Bringing in additional skilled professionals would help distribute the workload more efficiently, allowing the Office for Projects and Technology Transfer to operate more effectively. Additionally, continuous professional development for current staff would enhance their ability to manage complex projects and adapt to evolving industry needs.

Furthermore, collaboration with other offices at different faculties and universities could be elevated to a higher level. By fostering stronger inter-faculty and inter-university partnerships, the exchange of knowledge, resources, and best practices would be enhanced, ultimately benefiting all parties involved.

Why is it important to study this best practice?

The establishment of the Office, along with the foundation and Economic Council, showcases how structured support systems can bridge the gap between research and practical application in the industry. Understanding how these mechanisms work can offer valuable insights for other institutions aiming to enhance their own technology transfer processes.

Moreover, this best practice highlights the importance of integrating funding, project management, and industry collaboration in fostering research that has real-world impact. By studying this model, other academic institutions can adopt similar approaches to create conditions that encourage innovation, improve research outcomes, and strengthen ties with industry stakeholders, ultimately benefiting both academia and the business sector.

To what extent is the best practice applicable in another setting?

This best practice is highly applicable in other academic and institutional settings, especially where there is a need to strengthen the connection between research and industry. The establishment of an office dedicated to managing projects and facilitating technology transfer can be easily replicated in other universities or faculties. The processes for organizing funding,











managing research projects, and fostering collaboration with the business sector can be adapted to fit the specific needs and structures of different institutions.

What has been the main impact of the best practice?

The main impact of this best practice has been the continuous growth in the number of scientific research projects year after year. There has also been an increase in EU funding for our research ideas, reflecting the improved quality and relevance of our projects. Faculty members are more active in pursuing research, knowing they have strong support from the Office. Additionally, the Office itself is expanding, both in terms of staff numbers and their competencies, further enhancing its ability to support research and technology transfer initiatives.



3.6.2. SKAI LABS, University of Zagreb

Brief description

Best practices at the University of Zagreb is focused on spin-off companies establishment. There is significant support for the faculties and the academies for spin off company establishment. For example, there is Spin-Off Company Developed by Fundamental Research at the Faculty of Chemical Engineering and Technology (FKIT) and also at the Faculty of Transport and Traffic Sciences (SKAI LABS).

This best practice involves a systematic approach to translating fundamental research conducted into specific commercial spin-off companies. The practice encompasses various stages including identification of potential research projects, development of business models, securing funding, and providing continuous support to foster the growth of spin-off companies.











SKAI LABS is a technology company specializing in AI optimization of air traffic and airspace. By harnessing the power of artificial intelligence, SKAI LABS aims to revolutionize the efficiency, safety, and sustainability of global aviation systems. With a strong focus on optimizing air traffic management and airspace utilization, the company strives to improve the overall flight experience for passengers, enhance operational capabilities for airlines, and reduce environmental impacts.

Organisation providing best practice and location

University of Zagreb Faculty of Chemical Engineering and Technology/ Faculty of Transport and Traffic Sciences.

Duration of best practice

Development of this practice started in 2015 (FKIT) and continued in 2023 (SKAI LABS).

What is this best practice about?

This best practice is about bridging the gap between fundamental research and commercialization. It includes the following key aspects:

- Identifying research projects with high commercial potential.
- Providing researchers with training and resources for business development.
- Facilitating partnerships between researchers and industry stakeholders.
- Assisting in securing intellectual property rights and patents.
- Offering incubation and acceleration services to nurture spin-off companies.
- Providing ongoing mentorship and support to ensure the sustainability and growth of spin-offs.

SKAI LABS' Air Traffic Complexity Dashboard is designed to empower aviation professionals with real-time insights and comprehensive analytics for managing air traffic complexity. In today's fast-paced and increasingly congested skies, it has become vital to have a robust tool that provides a holistic view of the air traffic landscape, enabling more efficient and effective decision-making.

With the Air Traffic Complexity Dashboard, aviation authorities, airline operators, and airspace managers gain unparalleled visibility into the dynamic nature of air traffic. The dashboard combines advanced data processing algorithms with intuitive visualizations, offering a user-friendly interface that simplifies complex information and highlights critical patterns and trends.

What have been the main factors contributing for the success of the best practice?

<u>Challenge:</u> Securing initial funding for spin-offs. <u>Action:</u> Established partnerships with company firms based on which first commercial contract was put in place.

Challenge: Bridging the gap between academic research and market needs.

Action: Regular industry-academia workshops and feedback sessions.

Challenge: Providing adequate business training to researchers.











Action: Expose researcher to the solving industrial problem with constrain in time and resources.

How can certain aspects of the best practice be improved?

More exposed to the particular business challenges; Increase complexity of particular task.

Why is it important to study this best practice?

Studying this best practice is important because it provides a replicable model for other institutions aiming to commercialize their research. It showcases how academic institutions can effectively contribute to economic growth and innovation by fostering the development of spin-off companies.

To what extent is the best practice applicable in another setting?

This best practice is highly applicable in other academic and research settings, particularly those with strong research capabilities but limited commercialization experience. It can be adapted to fit the specific needs and resources of different institutions.

What has been the main impact of the best practice?

Successful establishment of multiple spin-off companies that contribute to economic growth. Increased commercialization of innovative research from the Faculty of Chemical Engineering and Technology.

Enhanced collaboration between academia and industry.

Development of a robust entrepreneurial ecosystem within the academic institution.

3.6.3. Digital Innovation Hub TERA















Brief description

The Digital Innovation Hub (DIH TERA) exemplifies a successful practice within TERA TEHNOPOLIS's technology transfer structure. This hub plays a crucial role in helping companies become more competitive by leveraging digital technologies to improve business and production processes, products, or services.

Key Features:

1. Access to Advanced Technologies: DIH TERA provides companies with access to the latest knowledge, expertise, and technologies. This includes support for implementing pilot projects, testing, and experimenting with digital innovations, which is critical for staying competitive in today's market.

2. Comprehensive Support Services: The hub offers a range of services that include business counseling, training, and support in intellectual property protection. These services are designed to enhance the innovation management capacities of SMEs, helping them to efficiently manage and implement innovative processes.

3. Collaboration and Networking: DIH TERA facilitates collaboration among various stakeholders, including universities, development agencies, and innovative SMEs. This network fosters a conducive environment for knowledge exchange and joint projects, enhancing the overall innovation ecosystem.

4. Focus on Sustainability: One of the hub's core objectives is to promote sustainable development through the adoption of advanced technologies. By integrating digital solutions that are environmentally and economically sustainable, DIH TERA ensures that technological advancements contribute positively to long-term development goals.

5. Education and Capacity Building: DIH TERA organizes training sessions and workshops aimed at building the capacities of entrepreneurs and SME managers. These educational activities are essential for equipping businesses with the skills needed to navigate and thrive in the digital economy.

DIH TERA has significantly contributed to the regional economy by enhancing the digital capabilities of local businesses. This initiative not only improves the competitiveness of SMEs but also supports the broader goal of fostering a knowledge-based economy through effective technology transfer and innovation support.

This practice showcases TERA TEHNOPOLIS's commitment to bridging the gap between research and market, ensuring that innovative ideas are effectively developed and commercialized.

Organisation providing best practice and location

The organisation responsible for the provision of the best practice in the management of technology transfer processes, including digital services, innovative approaches, and project support services, is DIH TERA (Digital Innovation Hub TERA). DIH TERA is located in Eastern Croatia, specifically encompassing organisations from five counties in that region.

Website

https://european-digital-innovation-hubs.ec.europa.eu/edih-catalogue/dih-tera











Duration of best practice

01.01.2024.-31.12.2040

What is this best practice about?

The best practice of DIH TERA centers on managing technology transfer processes, focusing on digital services, innovative approaches, and project support. Key aspects include a "one-stop-shop" model providing comprehensive services to enhance competitiveness through digital technologies and a robust technological infrastructure supporting pilot projects and innovation testing. Business and financial support strengthen the innovation ecosystem, and the consortium includes diverse organisations from Eastern Croatia, such as universities and SMEs with digitalisation expertise. DIH TERA operates regionally, nationally, and internationally, connecting companies with global service providers.

Key services include digital maturity assessments, technology integration support, skills and training programs, and access to finance through client profiling and advisory services. The support process begins with a needs analysis, followed by a tailored work plan involving advisory support, education, prototyping, and project proposal preparation. Focus areas include sustainable food supply chains, Al in quality control, blockchain in food certification, precision agriculture, and additive manufacturing. International collaborations with projects like D-Rural and Horizon 2020 extend their technical competencies and service offerings.

In summary, DIH TERA's best practice is a comprehensive approach to technology transfer, providing diverse digital and innovative services to boost the competitiveness and digital maturity of SMEs and other industrial sectors.

What have been the main factors contributing for the success of the best practice?

The success of DIH TERA's best practice in managing technology transfer processes can be attributed to several key factors. Their comprehensive "one-stop-shop" model streamlines services for businesses, while strong technological infrastructure provides access to cutting-edge technology and expertise. Collaboration with a diverse consortium of universities, development agencies, and IT-experienced SMEs, along with extensive national and international partnerships, enriches their ecosystem. Tailored support processes ensure relevant assistance, and a focus on innovation in areas like AI, blockchain, and precision agriculture demonstrates their commitment to advanced technologies. Skill development programs, access to funding, and regional and international reach further enhance their services. A proven track record, support from public and private sectors, adaptability, responsiveness, and recognition through patents and awards underscore their effectiveness. These factors collectively create a successful model for supporting digital transformation and innovation, contributing to business competitiveness and growth.

What challenges have you faced in the implementation of the best practice and what actions have been taken to address them?

DIH TERA has faced several challenges in implementing its best practices for managing technology transfer processes. These challenges include resource limitations, keeping up with rapidly evolving digital technologies, coordinating efforts among multiple stakeholders, addressing skill gaps, overcoming market resistance, navigating regulatory hurdles, and managing cultural differences in international projects.











To address these challenges, DIH TERA has taken various actions. They have actively participated in national and international funding programs, such as Horizon 2020 and Interreg, to secure necessary resources. Additionally, they have developed partnerships with public and private sector entities to pool resources and expertise. Continuous investment in technological infrastructure and collaborations with international consortia and research institutions have helped them stay technologically current.

Effective collaboration mechanisms have been established, including clear communication channels and governance structures to manage collaborations efficiently. Regular meetings and updates ensure alignment and coordination among stakeholders. To bridge skill gaps, DIH TERA offers a wide range of workshops, seminars, and training sessions, partnering with educational institutions to develop tailored training programs.

To build awareness and trust, DIH TERA demonstrates the value and impact of digital transformation through pilot projects and success stories. They provide risk assessment and mitigation strategies to address businesses' concerns. Navigating regulatory landscapes is facilitated by employing legal and regulatory experts and engaging with policymakers to advocate for supportive environments.

Cultural differences in international projects are managed through cultural sensitivity training and regular cross-cultural exchanges, fostering strong, trust-based relationships.

By addressing these challenges through strategic actions, DIH TERA has successfully implemented its best practices in technology transfer processes. Their proactive approach in securing resources, fostering collaborations, bridging skill gaps, and navigating regulatory and cultural hurdles has been instrumental in overcoming obstacles and driving success.

How can certain aspects of the best practice be improved?

To improve certain aspects of DIH TERA's best practice in managing technology transfer processes, they could diversify funding sources to reduce dependency on specific programs by seeking private investments, crowdfunding, or forming strategic alliances with industry leaders. Additionally, implementing a continuous learning program to keep the team and stakeholders updated with the latest technological trends and investing in research and development to explore emerging technologies like artificial intelligence, blockchain, and the Internet of Things could further strengthen their services.

Why is it important to study this best practice?

Studying DIH TERA's best practice is important because it provides valuable insights into effective strategies for managing technology transfer processes. This knowledge can help other organizations enhance their digital transformation efforts, improve collaboration among stakeholders, and overcome common challenges such as funding limitations, skill gaps, and technological advancements. Additionally, understanding their proactive approach to securing resources, fostering innovation, and navigating regulatory and cultural hurdles can serve as a model for similar initiatives, ultimately contributing to broader regional and international digitalization goals.

To what extent is the best practice applicable in another setting?

DIH TERA's best practice is highly applicable in other settings, particularly in regions looking to enhance their digital transformation efforts. The comprehensive "one-stop-shop" model, strong technological infrastructure, and tailored support processes can be adapted to various











contexts. Additionally, their approach to collaboration, funding diversification, skill development, and overcoming regulatory and cultural challenges provides a robust framework that can be replicated by other organizations and regions aiming to foster innovation and competitiveness through digital technologies.

What has been the main impact of the best practice?

The main impact of DIH TERA's best practice has been the significant enhancement of digital transformation and innovation capabilities among businesses in Eastern Croatia. By providing comprehensive support, cutting-edge technological infrastructure, and fostering strong collaborations, DIH TERA has enabled companies to become more competitive, implement advanced digital solutions, and successfully navigate the challenges of digitalization. This has not only improved the operational efficiency and market reach of these businesses but also strengthened the overall innovation ecosystem in the region.

3.6.4. UNIRI-INOVA Competition of University of Rijeka

RIMAP About us Posts Sea	rch Companies 🛩 Public sector 🛩 Research	ners 🛩 Financing Sources Statistics		CRO ENG	
			Lo	gin Registration	
Regional in Regional digital innovati the region. We invite you contact them about pos	Regional innovation matchmaking platform Regional digital innovation platform for the transfer of knowledge between the academic community and the economy with the aim of developing the innovation ecosystem in the region. We invite you to register, enter your development proposals/needs for human resources/competencies/research equipment and search profiles other users and contact them about possible cooperation by clicking on "Contact".				
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Brief description

The University of Rijeka, each year announce a Competition "UNIRI-INOVA" for financing or cofinancing interdisciplinary scientific and development project proposals from University of Rijeka scientists in cooperation and through networking with partners and stakeholders from complementary parts of the so-called five-fold innovation spirals, all with the aim of two-way transfer of knowledge and consequent regional economic and social development.

The purpose of the call is to support and encourage the achievement of the goals and quantitative and qualitative indicators of the University Strategy for the period 2021-2025, as well as internationally relevant indicators and goals of the European Strategy for Universities. Proposed projects can cover all forms of knowledge transfer but in order to participate,











applicants are obligated to post a profile for collaboration with other HEI's, RO or industry on a Regional innovation matchmaking platform (RIMAP), created by Regional Development Agency PRIGODA in cooperation with University of Rijeka for introducing, publicly, collaboration capacity between industry and academia in Primorsko-Goranska County.

Organization providing best practice and location

Regional Development Agency PRIGODA in cooperation with University of Rijeka and with support of STEP RI science and technology park of University of Rijeka ltd.

Website

https://rimap.uniri.hr/

Duration of best practice

Since 2020 the RIMAP digital platform is operational, and since 15.02.2022 started UNIRI-INOVA financing or co-financing program.

What is this best practice about?

The key aspects of the best practice involve several critical elements that made the system effective. Firstly, multiple actors were involved from the beginning to create a database of research capabilities and industry needs, with the aim of improving the knowledge and technology transfer system, regionally. These actors included the regional University, a development agency and a regional business support organization (BSO). Each of them used their communication channels to start editing profiles from both, industry and academia, which was essential for the digital platform to work.

Another important element is the funding provided by the University for innovative or R&D projects, which required to be firstly registered on the platform. This condition significantly boosted the completion of the platform with academic profiles. Since then, the digital platform has become the most comprehensive source of information and the reference place to find partnerships and initiate two-sided knowledge and technology transfers at a regional level, with the potential to expand nationally.

What have been the main factors contributing for the success of the best practice?

Sharing the vision and a good collaboration between stakeholders.

What challenges have you faced in the implementation of the best practice and what actions have been taken to address them?

Rising awareness and getting the profiles registered on the platform in the beginning. Offering funds with precondition asking applicants to register on the platform, firstly, was the key action that made it work.













How can certain aspects of the best practice be improved?

By taking action towards industry to boost their interest, by using incentives.

Why is it important to study this best practice?

It is one example how to motivate researchers to post their profiles on the platform and to attract industry players to do the same.

To what extent is the best practice applicable in another setting?

There are no constraints.

What has been the main impact of the best practice?

Greater visibility of RO, PO and companies and their capacity for collaborative project proposals, regionally. Digital platform, an enabling tool for advancing knowledge and technology transfer in both directions (academia-industry-academia).

4. Conclusion

The report provides information about best practices in the field of technology transfer, identified in the 6 partner countries of the STEIDA project – Bulgaria, Croatia, Slovakia, Slovenia, Spain and Türkiye. The best practices have been collected and elaborated through desk and field research and encompass different sub-categories of technology transfer ranging from management of technology transfer processes (digital services, innovative approaches, project support services), commercialization of patents, university-industry cooperation to promoting entrepreneurship and creation of spin-offs. Each best practice begins with a brief description, information about the providing organisation, duration of its existence, and continues with more insights related to the main success factors, challenges faced, mitigation actions, possible improvements, applicability and impact. The report has been developed with the involvement of the organisations responsible for providing the best practices and target the main stakeholders of the project, which include higher education institutions, business support organisations, current and newcoming professionals in technology transfer offices, students, academics, entrepreneurs and companies. The document will serve as a starting point for the development of the other foreseen project outputs, which include capacity building modules, curriculum on technology transfer and digital collaboration platform.





