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Good Practices of Tecnology Transfer Processes in Greece

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Two Best Practices of Greece

1. 1st of good practice of TT process:

Innovation for Society AWARDS (IFS)

1.1. Introduction

- ***Background:***

Open innovation competitions serve as a powerful tool for addressing social and business challenges by leveraging collective intelligence and fostering collaboration among diverse stakeholders. These competitions invite businesses, research institutions, startups, and individual innovators to contribute fresh ideas, technologies, and business models that can lead to sustainable solutions for real-world problems.

At the same time, they act as communication bridges between universities, research centers, and businesses, facilitating knowledge transfer, the commercialization of research outcomes, and the creation of new business opportunities. By bringing together different participants, these initiatives help build a strong innovation ecosystem where academic research meets market needs, leading to mutually beneficial collaborations and impactful solutions.

In the **Region of Central Macedonia (RCM) in Greece**, open innovation policies are at the forefront of efforts to create a dynamic and collaborative innovation ecosystem. These policies, spearheaded by both local and national governments, aim to foster synergies between universities, research centers, businesses, and international organizations. By aligning with the **European Union's (EU) strategic frameworks**, including Horizon 2020 and Horizon Europe, RCM's innovation initiatives emphasize research-driven growth, technology transfer, and the practical application of scientific advancements to real-world challenges.

Beyond solving specific problems, these competitions **serve as vital bridges** between academia and industry, facilitating knowledge exchange, accelerating the commercialization of research outcomes, and unlocking new business opportunities. By **integrating interdisciplinary expertise, encouraging cross-sector partnerships, and promoting entrepreneurial thinking**, open innovation challenges help build a resilient, forward-thinking ecosystem. They not only support economic development and competitiveness but also drive societal progress by addressing pressing global issues such as sustainability, digital transformation, and public health.

Through structured collaboration and co-creation, open innovation competitions ensure that **innovation is not confined to isolated research labs or corporate R&D**

departments but is instead democratized, engaging a broad spectrum of participants in the innovation process. This inclusive approach enhances creativity, maximizes impact, and fosters a culture of continuous learning and problem-solving—critical factors for sustainable growth in the modern economy.

- ***Objective:***

The main objective was to **crowdsource innovation** by inviting a diverse range of participants—such as entrepreneurs, researchers, students, startups, and other stakeholders—to contribute fresh ideas, technologies, or business models.

1.2. Good practice overview

- ***Description:***

The competition follows a structured, multi-phase process to ensure meaningful engagement and impactful results:

➢ **Challenges Identification –** The organizing team conducts a survey to pinpoint key industry and societal challenges relevant to the region.

➢ **Challenge Ownership** – Businesses and organizations express their interest in participating as challenge owners, presenting specific problems they seek to address.

➢ **Call for Solutions** – A call is issued for innovators, startups, and research teams to submit proposals offering viable solutions.

➢ **Awareness Campaign & Outreach** – A roadshow introduces the competition to potential participants, including universities, research institutions, and entrepreneurial hubs.

➢ **Selection of Finalists** – Challenge owners, in collaboration with the organizing team, select the most promising teams to advance in the competition.

➢ **Bootcamp & Mentorship** – An **intensive 8-week bootcamp** is conducted, providing finalists with tailored mentoring, coaching, and training sessions.

➢ **Proof of Concept (PoC) Development –** Selected teams collaborate with businesses to develop tangible prototypes or pilot solutions.

➢ **Final Pitching & Awards Ceremony** – The competition culminates in a pitching event where solutions are evaluated, and winning teams are selected based on their innovation potential, feasibility, and impact.

- ***Achievements:***

The IFS Awards have made a significant contribution to the **innovation landscape** of Central Macedonia, fostering high-value collaborations and producing concrete outcomes:

- **10 major companies** participated as challenge owners.
- **15 finalist teams** were selected, each offering innovative solutions to industry challenges.
- **17 institutional partners** were mobilized, enhancing the ecosystem's support network.

Beyond the numbers, the competition has driven **technology transfer, market-driven innovation, and investment opportunities**, with winning solutions often evolving into commercially viable products and services.

- ***Source:***

The initiative mobilized by the Region of Central Macedonia, Greece, with the participation of many institutions like universities and Research Centers.

1.3. Partnerships

- ***Stakeholders Involved:***

The **IFS Awards** were co-organized by a diverse group of institutions dedicated to fostering innovation and economic growth:

- **Greek Exporters Organization** – A key body supporting Greek businesses in expanding to international markets.
- **Federation of Industries of Greece** – Represents and supports industrial enterprises, promoting competitiveness and innovation.
- **Thessaloniki Innovation and Technology Center** – A hub for technological advancement and business collaboration in Northern Greece.
- **Architectural Aluminium Academy** – Focuses on training and innovation in the aluminium and construction industries.
- **Greek-German Chamber of Commerce** – Strengthens economic and technological ties between Greece and Germany.
- **Technology Forum** – A networking platform connecting research, technology, and entrepreneurship.

The event was further supported by leading academic institutions, business networks, and innovation accelerators, including:

- **Thessaloniki Innovation Zone** – An ecosystem fostering startups, research, and high-tech investments.

- **Aristotle University of Thessaloniki** – Greece's largest university, driving research and innovation.
- **Centre for Research and Technology Hellas** (CERTH) – A leading research institution advancing science and industry collaboration.
- **University of Macedonia** – Specializes in business, economics, and social sciences, contributing to the entrepreneurial landscape.
- **International Hellenic University** – Offers high-level research and education, bridging academia with industry.
- **Kinisis Ventures** – Supports Greek startups in expanding internationally.
- **Beyond Exhibition** – A premier event showcasing cutting-edge technology and innovation.
- **I4G** – A startup incubator nurturing young businesses and innovative projects.
- **Ok!Thess** – A leading accelerator helping startups scale their ideas.
- **Ideas Forward** – Focuses on supporting and funding early-stage innovation.
- **Atlantis Consulting** – Provides advisory services on innovation and business development.
- **Anthology Ventures** – A venture capital firm investing in high-potential startups.
- **National Bank of Greece** (NBG) – Offers financial support and innovation funding.
- **Thessaloniki Chamber of Commerce and Industry** – Strengthens local businesses through networking and investment opportunities.
- **Elevate Greece** – A national initiative supporting startups and fostering a dynamic entrepreneurial ecosystem.

- ***Role of Each Partner:***

- **Greek Exporters Organization** – Supported internationalization efforts, connecting innovative solutions with global markets.

- **Federation of Industries of Greece** – Provided access to industrial stakeholders and promoted collaboration between companies and innovators.

- **Thessaloniki Innovation and Technology Center** – Acted as a hub for technological exchange, fostering business-research synergies.

- **Architectural Aluminium Academy** – Offered industry-specific expertise, particularly in sustainable and advanced materials.

- **Greek-German Chamber of Commerce** – Facilitated cross-border partnerships and knowledge transfer between Greece and Germany.

- **Technology Forum** – Served as a networking platform, connecting researchers, startups, and established businesses.

Supporting Organizations & Their Roles

- Thessaloniki Innovation Zone – Created an enabling environment for startups and knowledge-based businesses.
- Aristotle University of Thessaloniki – Provided academic expertise, research support, and a talent pipeline.
- Centre for Research and Technology Hellas (CERTH) – Contributed cutting-edge research and technology transfer opportunities.
- University of Macedonia – Focused on business development, economic strategy, and social impact studies.
- International Hellenic University – Bridged academia with industry through applied research and partnerships.

1.4. Process

- ***TT process methodology:***

The Innovation for Society (IFS) Awards 2024 program is structured in a way that facilitates the development of solutions to real-world challenges. The program includes the following phases:

- **Challenges Phase:** Companies and organizations present their specific industry challenges, which are open for solution proposals from startups, research institutions, or innovators.
- **Application Phase:** Innovators, startups, or research teams apply to tackle the challenges. They propose solutions that aim to address the presented problems. After a selection procedure with the challenge owners we finalize the solution providers.
- **Bootcamp Phase:** Selected participants enter an 8-week intensive Bootcamp from mid-June 2024. It includes weekly training, coaching, and mentoring sessions, which are conducted mostly online. However, some on-site visits to company facilities will also take place.
- **Proof of Concept (PoC) Development:** During the Bootcamp, participants will work with challenge owners (the companies) to develop a Proof of Concept (PoC) or pilot solutions for the problems they are addressing.

- ***Key Milestones:***

A key stage of the Innovation for Society Awards 2024 was the collaboration with major companies, research centers, and academic institutions as they joined forces to drive innovation. Big corporations participated as challenge owners, presenting real-world problems and inviting solution providers to come up with groundbreaking ideas. The engagement of these large organizations not only added credibility but also ensured that the solutions developed were aligned with the current needs of the market. Academic institutions and research centers also played a critical role as solution providers, leveraging their expertise and knowledge to create innovative responses to the challenges. During the program, participants were given the opportunity to refine their solutions through various support sessions, including a bootcamp, where experts provided mentorship and guidance to help participants mature their ideas and make them more viable and impactful. This stage fostered a rich environment of collaboration, ensuring that the solutions were both innovative and practically applicable to the real-world challenges posed by the participating companies.

- ***Innovation:***

The **Innovation for Society Awards 2024** in Greece introduced several new and innovative elements that set it apart as a best practice in fostering innovation for societal impact:

- **Collaboration between Industry and Academia**: One of the key innovative aspects was the collaboration between large corporations and academic institutions. Typically, industry and academia operate separately, but this program bridged that gap by involving **big companies as challenge owners** and **research centers and universities as solution providers**. This synergy ensured that the solutions were grounded in both practical industry needs and cutting-edge academic research.
- **Focused on Real-World Problems**: Unlike many traditional competitions, the awards involved **real-world challenges** posed by industry giants. This allowed the innovation to directly address market needs and societal issues, making the solutions more impactful and scalable.
- **Supportive Development Process**: The program offered a **bootcamp** and other sessions that provided **mentorship and guidance** to the solution providers. This structured support system ensured that ideas were not only innovative but also matured into viable, sustainable solutions. The ability to refine ideas during these sessions was a novel approach that increased the likelihood of success and commercialization.
- **Inclusion of Diverse Stakeholders**: By inviting a range of participants, from **startups to research institutions**, the awards encouraged **inclusive innovation**. This helped bring together a diverse set of perspectives, which is essential for tackling complex societal challenges and ensuring that solutions were holistic and diverse.

- **Social Impact Focus**: The awards prioritized solutions that benefited society, whether through **sustainability**, **health**, or **education**. This focus on societal good ensured that the innovations not only had commercial potential but also aligned with global efforts to address social and environmental challenges, making the program particularly forward-thinking.

These elements combined make the **Innovation for Society Awards 2024** a groundbreaking initiative in Greece, pushing the boundaries of how innovation can be harnessed to solve pressing societal issues while fostering collaboration between various sectors.

1.5. Outcomes

- ***Impact on Stakeholders:***

Related to the stakeholders:

- **Investment Opportunities**: For venture capitalists or investors involved in the process, open innovation challenges provide early visibility into promising startups or technologies that they might want to fund.
- **Collaboration and Networking**: Partner organizations or experts involved in the evaluation process can identify new collaboration opportunities with the innovators, leading to new projects, research, or commercial ventures.
- **Technology Transfer and IP Access**: In some cases, challenges lead to opportunities for technology transfer, licensing, or collaboration on intellectual property (IP), benefiting academic institutions or companies looking to commercialize innovations.

Regarding the Hosting Organizations (Challenge Sponsors):

- **Access to Diverse Ideas and Expertise**: Organizations gain access to a wider pool of innovative ideas from external sources, including individuals, startups, or experts from other industries. This can lead to novel solutions that internal teams may not have considered.
- **Cost-Effective R&D**: Hosting a challenge can often be more cost-effective than traditional research and development (R&D). Instead of investing heavily in internal teams or infrastructure, companies receive numerous potential solutions at a fraction of the cost.
- **Faster Time-to-Market**: Since multiple participants work simultaneously on solving the problem, the process can significantly reduce the time it takes to find a viable solution compared to in-house development.

- **Brand Visibility and Thought Leadership**: By sponsoring open innovation challenges, organizations can enhance their brand image as forward-thinking and innovation-focused. This can attract talent, collaborators, and partners.

- ***Concerning Innovators:***

- **Monetary Rewards**: Participants can win cash prizes, grants, or other financial incentives, which provide direct economic benefits for their efforts.
- **Access to Resources**: Many open innovation challenges offer additional resources such as mentorship, technical support, or access to networks and investors. This can be highly valuable for startups or individual innovators looking for guidance and connections.
- **Recognition and Credibility:** Winning or being shortlisted in a well-known innovation challenge can significantly boost the credibility and visibility of the participant's work. This recognition can help secure future opportunities, including partnerships, funding, or even media exposure.
- **Commercialization and Market Entry**: In some cases, participants are provided with pathways to commercialize their solutions through partnerships with the challenge sponsor. This can include help with manufacturing, distribution, or scaling their innovations to the market.
- **Learning and Development**: Participants gain experience in real-world problem-solving, which can enhance their skills and knowledge. Even if they do not win, the feedback received during the challenge helps refine their ideas.

- ***In respect of Society and the Public:***

- **Solutions to Societal Problems**: Challenges focused on areas like healthcare, education, sustainability, and energy often produce solutions that directly benefit society. For example, new medical technologies, environmental innovations, or educational tools can improve quality of life and address critical global challenges.
- **Democratization of Innovation**: Open innovation challenges democratize the innovation process by enabling anyone with a good idea to contribute, regardless of their background or location. This inclusive approach can bring diverse perspectives to the table and empower underrepresented groups.
- **Economic Growth and Job Creation**: Successful innovations from open challenges can lead to the creation of new companies, industries, or jobs. Additionally, improved products and services can stimulate economic activity in various sectors.

- **Increased Public Engagement in Innovation**: The public gets involved in solving real-world problems, fostering a sense of participation and ownership in innovation efforts. This engagement can lead to increased awareness and support for science, technology, and social causes.
- **Partnership Opportunities**: Many organizations establish long-term partnerships with participants who present promising solutions, leading to collaborations that extend beyond the challenge.

1.6. Challenges Overcome

- ***Key Barriers:***

Navigating intellectual property rights and establishing clear terms regarding ownership and usage rights is essential.

- Securing adequate funding for prizes, marketing, and operational costs can be a significant barrier.
- Participant Engagement. Attracting a diverse group of participants (e.g., startups, researchers, companies) can be difficult. High levels of competition in the innovation space may lead to low engagement if the challenge does not clearly communicate its value proposition.
- Organizing the competition logistics, such as scheduling, venue selection and platforms for submissions, can be complex and time-consuming.
- Navigating intellectual property rights and establishing clear terms regarding ownership and usage rights is essential.
- Securing adequate funding for prizes, marketing, and operational costs can be a significant barrier.
- Participant Engagement. Attracting a diverse group of participants (e.g., startups, researchers, companies) can be difficult. High levels of competition in the innovation space may lead to low engagement if the challenge does not clearly communicate its value proposition.
- Organizing the competition logistics, such as scheduling, venue selection and platforms for submissions, can be complex and time-consuming.

- ***Solutions Implemented:***

- The contest was supported from the largest R&D&I centers. Experienced people from TTO offices were and offered their time and expertise.

- Sponsorships asked from big companies, and we have around 20 experienced coaches to support the teams with no cost, for the benefit of the ecosystem.
- It was developed a network of co-organizers and supporters from the whole spectrum of the ecosystem form the very beginning. We have also had technical support by the Interreg Europe policy learning platform on how to implement open innovation initiatives
- It was contacted/communicated to people with experience and since the organizer is a region it has several departments with evaluation capacity and knowledge.
- An experienced digital marketing team was hired.
- When picking the challenge owners it was stressed out the importance of placing a challenge that was a real problem for them.

1.7. Lessons Learned / adoption guidelines

- ***Best Practices:***

- Starting co-designing and co-implementing from day one.
- Promote it to everyone, from known researchers to PhD students, and from startups to the bigger companies.
- Ask experienced people to give back to the ecosystem by offering part of their precious time.

- ***Recommendations:***

- Open Innovation demands the support from the whole ecosystem, but someone must be the leader.
- Start it even though it is very time consuming, because it creates real value.
- Collaborations must start from day one and have a long-term perspective.
- Pick challenge owners that are capable of implementing innovation ideas.

1.8. Future Outlook

- ***Next Steps***

- It is considered to engaged public companies and tech companies as well as international solution providers.
- It would be organized again in collaboration with as many stakeholders as possible.
- Create another path for tech transfer based on specific challenges/problems
- Bring closer researchers and companies

- ***Potential Impact***

The **Innovation for Society Awards 2024** could have several long-term implications for the broader **technology transfer (TT) ecosystem** in Greece and beyond. By encouraging collaboration between **industry, academia, and research centers**, the awards foster a culture of innovation that could lead to significant shifts in how research and development are conducted and commercialized. Some potential long-term effects include:

- **Strengthening Industry-Academia Partnerships**: The successful collaboration between large companies and academic institutions could create a model for future partnerships. This would encourage more **technology transfer offices (TTOs)** at universities to engage directly with industry to commercialize research, leading to more **industry-relevant innovations** and **job creation** in high-tech sectors. As these relationships deepen, they could help break down barriers that traditionally separate research from real-world application.
- **Increased Innovation Ecosystem Connectivity**: By involving a diverse array of stakeholders—**startups, research centers, corporations, and academia**—the awards help build a more integrated innovation ecosystem. This connectivity fosters **cross-sector collaboration**, creating a fertile environment for new ideas, technologies, and business models. As these connections grow stronger, the **knowledge transfer** process will become more fluid, accelerating the commercialization of new technologies and making it easier to navigate the **innovation lifecycle** from idea to market.
- **Enhancing Greece's Global Competitiveness**: The awards place Greece at the forefront of innovative practices within the **European and global innovation landscape**. By encouraging local companies to address global challenges, Greece could emerge as a hub for **sustainable innovation** and **technology commercialization**, attracting more international investment and talent. As Greek companies succeed in developing scalable solutions, they could gain access to larger markets, enhancing the **international profile** of Greece's TT ecosystem.
- **Catalyzing Startup Growth and Sustainability**: The program's emphasis on **mentorship** and **refining solutions** could lead to the emergence of **sustainable startups** that are better equipped to scale. With ongoing support, these startups can transition from early-stage ideas to successful businesses, contributing to the **growth of Greece's entrepreneurial ecosystem**. Moreover, this could encourage other startups to follow suit, realizing the potential of working closely with established players and research institutions.
- **Catalyst for Policy and Structural Changes**: Over time, the success of such programs could prompt **policy makers** to invest more heavily in the TT infrastructure. The demonstrated benefits of collaborative innovation may lead to changes in **regulatory frameworks**, creating a more supportive environment for technology commercialization. This could include easier access to **funding**

opportunities, **IP management**, and **incubation programs** for startups and research-driven companies.

- **Sustainability and Social Responsibility**: As the awards emphasize **socially impactful solutions**, there could be a wider shift towards **impact-driven innovation** across the TT ecosystem. This would encourage companies and research centers to focus not just on profitability but also on creating **innovations that address pressing social and environmental challenges**, contributing to **long-term societal sustainability**.
- In summary, the **Innovation for Society Awards** could serve as a **catalyst for long-term transformation** within the TT ecosystem. By fostering deeper connections between academic research and industry needs, promoting sustainable innovation, and creating a robust support infrastructure for entrepreneurs, the initiative could contribute to an innovation-driven economic future for Greece, with ripple effects across the global tech landscape.

2. 2nd of good practice of TT process:

CERTH Technology Transfer Office – SPIRA

2.1. Introduction

- ***Background:***

The good practice selected to be presented in the following paragraphs refers to the establishment and operation of SPIRA, the upgraded Technology Transfer Office of Centre for Research and Technology Hellas (CERTH).

Centre for Research and Technology-Hellas (CERTH), founded in 2000, is a leading Research Centre in Greece and in the EU. It is a legal entity governed by private law with non-profit status, supervised by the General Secretariat for Research and Technology (GSRT) of the Greek Ministry of Development & Investments. The prime mission of CERTH is:

- Promotion of the triplet Research – Development – Innovation
- Conduction of High Quality Scientific Research
- Development of Innovative Products and Services
- Strong partnerships with the International & National Industry
- Strong collaboration with Research Centres and Universities in Greece and abroad

- ***Objective:***

More than 1600 people work at CERTH's five institutes (Chemical Process & Energy Resources Institute (CPERI), Information Technologies Institute (ITI), Hellenic Institute of Transport (HIT), Institute of Applied Biosciences (INAB), Bio-economy and Agro-technology

Institute (IBO)) and at its central administration, with the majority being engineers and scientists. CERTH combines its unique research facilities and high qualified research personnel, to transform scientific knowledge into innovative technological applications aiming to strength the national economy and respond to the needs of society in many areas including: Energy, Environment, Industry, Information & Communication, Transportation & Sustainable Mobility, Health, Agro-biotechnology, Smart farming, Safety & Security, as well as several cross-disciplinary scientific areas. CERTH is essentially a self-supported Research Centre. By the end of 2023 the annual turnover was ~ € 65,8 Million coming from: bilateral industrial research contracts at 10,5%, competitive research projects at 77,6% and government institutional funding at 7,2%. CERTH has received numerous awards and distinctions such as the European Descartes Prize, the European Research Council (ERC) Advanced Grant, Microsoft International Contest Prize, the Trading Agents Competition Award and many more. It is currently ranked in the 11th position among the EU Research Centers in terms of HORIZON Europe Net EU Contribution. (1st position within Greek Research organizations).

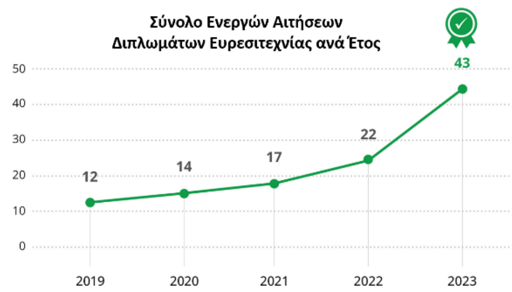
Linking research to the economy is an integral part of CERTH strategy. Since 2005, the Internal Regulations of the organisation, foreseen the operation of the Liaison Office with main objectives, among others, the support of researchers in matters of intellectual property protection and economic exploitation of research results, the transfer of technology and know-how to companies and industries, and the creation of databases that record research results. At the end of 2018, technology transfer activities are undertaken by the Extroversion Department, implementing actions aimed at the exploitation of the research products, services and intellectual property of CERTH as well as the interconnection of the Centre with the domestic and global market, while in early 2021, the technology transfer activities are implemented by the Directorate of Extroversion, Mobility and Innovation.
Being one of the strongest poles for applied research in the country, for every 1 euro invested by the Greek state, the Centre generated another 13 euros in 2023 through highly competitive procedures at the global level, with the increase of this multiplier exceeding 7 points in the last eight years. This constant growth has exacerbated the need for more Technology Transfer (TT) services for the commercial exploitation of the increasingly rich research outcomes.

For this reason, CERTH put in place in April 2022 the SPIRA action plan. Through SPIRA, CERTH's TTO turned to large-scale collaborative actions with the objectives of

- promoting the threefold research - innovation - development,
- further strengthening the connection of important research and academic actors of the northern Greek ecosystem with the economy,
- strengthening the entrepreneurial spirit within the research communities and

- ensuring the range, quality and stability of the TT services both to the research community of the organisation itself and to third party research/academic organizations

In this context, CERTH's TTO also supported 4 more important research and academic organizations in their TT needs: the Hellenic Agricultural Organisation DEMITRA, the International Hellenic University, the University of Macedonia and the University of Western Macedonia. Through SPIRA more than 1500 researchers (researchers, faculty members, post-doctoral fellows and other research and scientific staff) have access to a wide range of technology transfer services.



2.2. Good practice overview

- ***Description:***

At the end of 2021, an action plan to upgrade the operation of CERTH's TTO was drawn up in the form of a 7-year business plan called SPIRA. A work plan setting clear objectives, describing concrete results and tangible deliverables, clear timeline and documentation of the needs of all required resources was developed initially for the first two years of the upgraded operation of CERTH's TTO. Its sustainability for the next 5 was examined as well. In brief, as of 4/2022 SPIRA is active in the full range of Technology Transfer activities. Its activities started with the mapping of inventions by research teams of CERTH and the 4 partner institutions, the identification of needs for further maturation and the pre-evaluation of the potential for commercial exploitation. To date, two consultancy programs have been designed and implemented, one on IP protection and one on innovative entrepreneurship development. A further mini proof of concept programme has been implemented. At the same time, training needs in technology transfer for both TTO staff and the research community as a whole have been identified and an appropriate training programme has been designed and implemented. In addition, promotional activities and networking of researchers with industry, SMEs and the investment community are implemented through the organization of special events and participation in renowned technological exhibitions in Greece and abroad. These actions continue and are organized at regular intervals

- ***Achievements:***

From 4/2022 up to date SPIRA's main achievement include:

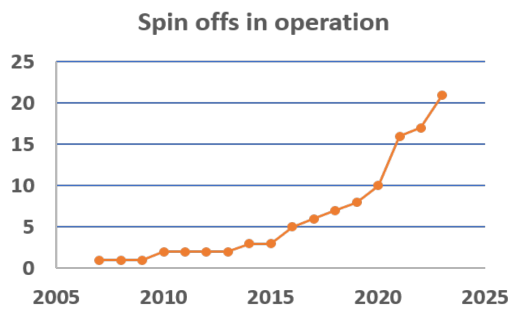
-
- > 100 hours of training in TT and entrepreneurship development inventions disclosures

consultation
- > 400 hours on consultation on innovative business development
- 23 national patents applications

- 35 feasibility studies / scenarios for commercial exploitation

full business plans
n
licensing agreements
- 2 bootcamps with the participation of investors
- 2 workshops focused on early stage entrepreneuship

cases
- > 50 innovative technologies promoted during Tech Exhibitions in Greece and abroad
- 2 study visits in TTOs and organizations supporting innovative entrepreneurship in the Netherlands and in Ireland.



It is worth mentioning that during the reference period, SPIRA has given a particularly strong impetus to the establishment of IP and the development of innovative entrepreneurship. Referring to CERTH of the 43 active patents it currently holds, 21 were filed in the reporting period (49% increase), while 6 new spin-offs were added to the 17 existing ones (26% increase). The graphs illustrate the surge in activity, vividly highlighting the critical contribution of SPIRA to the development of entrepreneurial spirit within research communities.

2.3. Partnerships

- ***Stakeholders Involved:***

SPIRA's success is driven by a well-structured network of strategic partners that contribute expertise, resources, and access to technology transfer opportunities. The primary partners involved in the initiative include:

➢ **Centre for Research and Technology Hellas (CERTH)** – The lead organization responsible for the execution of SPIRA. CERTH provides technology transfer (TT) expertise, manages the network of external experts, and oversees financial management and administrative coordination.

- **Hellenic Agricultural Organisation DEMITRA** – A key beneficiary of SPIRA's TT services, leveraging research findings to develop agritech innovations and improve commercialization pathways in the agricultural sector.
- **International Hellenic University** – Supports the initiative by integrating academic research with industry needs, contributing to capacity-building programs, and participating in IP and commercialization efforts.
- **University of Macedonia & University of Western Macedonia** – These institutions play a crucial role in adopting SPIRA's technology transfer methodologies, benefiting from networking opportunities and capacity-building activities.
- **External Experts & Industry Collaborators** – A network of professionals specializing in intellectual property (IP), commercialization, and business development who provide strategic support in technology transfer processes.
- **Operational Programme 'Competitiveness, Entrepreneurship, and Innovation 2014-2020'** – The funding body that co-financed SPIRA's first 18 months of operation, ensuring financial sustainability for the initial phase

- ***Role of Each Partner***

- **CERTH:** Acts as the central hub, providing technical expertise, financial management, and training for technology transfer professionals.
- **University Partners:** Serve as the primary beneficiaries of technology transfer services, helping integrate research into commercial ventures.
- **External Experts:** Offer legal, business, and commercialization guidance, helping bridge the gap between academia and industry.
- **Funding Organizations:** Provide financial resources and strategic oversight to sustain and expand SPIRA's reach.

- ***Collaboration Mechanisms***

To facilitate effective partnerships, SPIRA has implemented the following mechanisms:

- **Regular Networking Events & Policy Roundtables:** Strengthen collaboration between research institutions and industry players, fostering knowledge exchange and innovation.
- **Hub-and-Spoke Model:** Enables efficient resource sharing, reducing service costs and accelerating the commercialization process.
- **Open Dialogue with TT Networks & Managing Authorities:** Ensures alignment with broader national and EU technology transfer strategies and maximizes financial resource utilization.

2.4. Process

At the end of 2021, an action plan to upgrade the operation of CERTH's TTO was drawn up in the form of a 7-year business plan called SPIRA. A work plan setting clear objectives, describing concrete results and tangible deliverables, clear timeline and documentation of the needs of all required resources was developed initially for the first two years of the upgraded operation of CERTH's TTO. Its sustainability for the next 5 was examined as well

- ***Key milestones in the setting up and running of SPIRA are the following:***

  - SPIRA's success was built upon a series of structured and well-defined milestones, including:
  - Formation of Strategic Partnerships
  - The collaboration among key stakeholders was not coincidental but based on:
  - A shared vision for research commercialization.
  - Established relationships with industry stakeholders and strong ties to regional economic and social challenges.
  - A history of successful research collaborations among the involved institutions.
  - Geographical proximity, which facilitated operational efficiency and service delivery.
  - The update of TT manuals, forms, procedures etc,

SPIRA implemented a systematic and digitalized approach to streamline and standardize Intellectual Property (IP) management, licensing agreements, and commercialization strategies.

High-quality technology transfer services were ensured through continuous improvements in workflow standardization.

- The external experts network formation

The parameterization of the two programs (the IP counsultation and of the business development) was of high importance. The balance between inhouse expertise and extpernal experts services was taken into consideration in order to timely respond to the TT needs of the different teams. Thematic expertise was also taken into consideration in order to match as much as possible the scientific/technical fields in which the innovation was to be developed.

- The open dialogue with other TT networks and the managing authority / funding organization

SPIRA is not the only TT network. Several other networks were operating during the same period. The establishment of open dialogue and frequent meetings to discuss progress and difficulties in the operations of the networks provided crucial feedback for the improvement of the practice. In addition, the open dialogue with the Managing Authority

/ Funding organization allowed the best possible use of financial resources. It is worth mentioning that the MA had developed a mindset that embraced innovation projects.

SPIRA is a project with innovative aspects as it adopted two key organizational innovations. Firstly, the operational flexibility of SPIRA to activate, in addition to the office staff, a network of external partners according to the maturity stage of the technology to be exploited, the research area and the required specialization of the service requested. This model ensures high service speeds, high quality and added value in the service provided, shortening the time-to-market for a technology and thus speeding up the flow of any revenues from the exploitation of the technology, for reinvestment. A second organizational innovation concerns the adoption of the "hub and spoke" architecture. This architecture is perfectly suited to the size of the partnership (5 partner organizations) and the degree of maturity of the partner organizations in terms of TT service provision. SPIRA, as a central service hub, brings together all the heterogeneous requests of the network, develops expertise and tools and provides TT services to the partner organizations. Each request is a case study in which the staff of the partner institutions is trained at the same time. With this architecture, SPIRA can provide solutions to local challenges (regional RIS3 priorities), saving resources (reducing service costs) and creating economies of scale (technology transfer almost throughout the country), while accelerating the maturation of the TT processes and the supporting structures of the partner organizations (spokes).

2.5. Outcomes

As already mentioned, SPIRA as a central service hub, brings together all the heterogeneous requests of the network, develops expertise and tools and provides TT services to the partner organizations. Each request is a case study in which the staff of the partner institutions is trained at the same time. With this architecture, SPIRA can provide solutions to local challenges (regional RIS3 priorities), saving resources (reducing service costs) and creating economies of scale (technology transfer almost throughout the country), while accelerating the maturation of the TT processes and the supporting structures of the partner organizations (spokes).

In addition to the operational level, CERTH's TTO through SPIRA strengthened its role as a policy maker for the exploitation of research and the development of innovative entrepreneurship. It strengthened its partnerships with the local and national innovation ecosystem through the co-organisation of networking events, but mainly through its active participation in policy discussions and roundtables as well as through the warm support of the recently created Hellenic Network of Technology Transfer Offices (METEX) of which it is a founding member.

- ***Key Achievements of SPIRA***

Since its launch in April 2022, SPIRA has played a transformative role in technology transfer (TT) in Greece. By implementing a structured, scalable, and collaborative approach, it has generated significant results in key performance areas:

- **60+ invention disclosures** from partner institutions.
- **100+ hours of training** in TT and entrepreneurship development.
- **120+ IP consultation sessions** supporting patenting strategies.
- **400+ hours of business consultation** for innovative startups.
- **23 national patent applications** and **7 PCT filings**.
- **35 feasibility studies** evaluating the commercial potential of research outputs.
- **15 full business plans** developed for startup formation and technology licensing.
- **6 new spin-off companies** established, contributing to economic growth.
- **13 licensing agreements** enabling commercialization of research.
- **4 proof-of-concept projects** validating technology market readiness.
- **2 bootcamps** with investor participation, fostering early-stage entrepreneurship.
- **2 study visits** to international TTOs (Netherlands, Ireland) to benchmark global best practices

- ***Impact on Stakeholders***

SPIRA's initiatives have significantly benefited academic researchers, startups, industry partners, and policymakers by:

- Increased patent applications by 49% at CERTH.
- 26% growth in spin-offs, highlighting improved entrepreneurial culture within research institutions.

- Strengthened industry-academia ties, fostering commercialization partnerships.
- Participation in technology exhibitions in Greece and abroad.
- Established a network of external experts, providing specialized commercialization support.

- SPIRA played a key role in shaping TT policies and innovation support programs.
- Active involvement in the Hellenic Network of Technology Transfer Offices (METEX), ensuring sustained policy impact

- ***Innovation Diffusion***

The structured approach of SPIRA has led to knowledge diffusion and best-practice adoption across multiple institutions:

  - The hub-and-spoke model has been widely recognized as a best practice, reducing TT service costs and improving accessibility.
  - TT manuals and workflows have been standardized and adopted by other research institutions.
  - Open collaboration with funding organizations has improved financial sustainability for TT initiatives.

2.6. Challenges Overcome

Despite its success, SPIRA faced several challenges in establishing an efficient and sustainable technology transfer (TT) ecosystem. These challenges required strategic interventions, active engagement with stakeholders, and innovative approaches to ensure long-term impact.

- **Limited Financial Support**: A significant challenge for SPIRA was ensuring financial sustainability beyond the initial funding phase. The absence of dedicated, long-term funding for TT activities in Greece posed a risk to the continuity of operations. The solution was: a) Active Pursuit of Public Funding and b) Diversification of Revenue Streams by adopting this multi-source funding approach, SPIRA ensured its financial sustainability, reducing reliance on short-term project funding.
- **Bridging the Gap in the TT Ecosystem:** One of the most persistent barriers to TT in Greece has been the fragmentation of the ecosystem—universities, research institutions, and industry players often operate in isolation. The lack of structured networks and coordination resulted in missed commercialization opportunities and duplication of efforts. The solution was: a) Creation of centralized TT hub, b) Industry & investor engagement, ny actively facilitating collaboration and breaking down institutional silos, SPIRA enhanced the connectivity of the Greek TT ecosystem, ensuring faster commercialization and increased innovation impact.

2.7. Lessons Learned / adoption guidelines

- Cross-institutional collaboration accelerates innovation impact.
- Early-stage commercialization support (e.g., proof-of-concept funding) is crucial.
- Continuous engagement with policymakers enhances national TT frameworks.

2.8. Future Outlook

SPIRA aims to:

- Scale its impact by **expanding the network of collaborating institutions**.
- **Increase international collaborations**, learning from leading TT ecosystems.
- Develop **new funding models** to ensure sustainability and further growth.

By continuing its **evidence-based, structured** approach, SPIRA is set to play a **key role in shaping the future of technology transfer in Greece.**