

Zbornik 12. mednarodne Konference o prenosu tehnologij – 12. ITTC

Proceedings of the 12th International Technology Transfer Conference – 12. ITTC

Mednarodna konferenca o prenosu tehnologij - ITTC

International Technology Transfer Conference - ITTC

Uredili / Edited by

Špela Stres, Levin Pal, France Podobnik, Duško Odić, Robert Blatnik

<http://tehnologije.ijs.si/ittc>

9.–11. oktober 2019 / 9–11 October 2019

Ljubljana, Slovenia

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INTRODUCTION AND AIM OF THE CONFERENCE

Objectives of the Conference

The main aim of the Conference is to promote knowledge exchange between academia and industry, in order to strengthen the cooperation and transfer of innovations from research labs into industrial exploitation.

In the past events, we hosted more than 2500 participants, including investors, inventors, researchers, commercialization experts, start-up funders, industrial development experts etc. We have successfully organized six competitions to award the technology with the best business proposition, which led to successful start-ups and licensing contracts, and to 11 annual awards of CCIS for best innovation.

Conference prize for the best innovations in 2019

The main objective of the special prize for innovation is to encourage commercialization of inventive/innovative technologies developed at public research organizations and to promote cooperation between research organizations and development groups in the economy.

One of the main objectives is also promoting the entrepreneurship possibilities and good practices in the public research organizations. The researchers are preparing business models for their technologies and will present them in front of an international expert panel in a pitch competition. However, they will need support in the form of both commercial assistance and financial resources to bridge the gap to the market and establish a start-up company or license out their technology. How shall they do it?

Pitch competitions in the last 11 years resulted in spin-out company creation or licensing case development in at least one case per competition each year.

Key stakeholders

The conference will involve different key stakeholders in the process (public research organizations as knowledge and technology parks as infrastructure providers), agencies, consultants, capital (VC, agencies, angels), SMEs, international enterprises, private innovators, and others.

Target audience and benefits

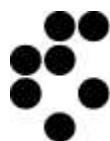
Target audience of the conference are researchers, students and post-graduate students with entrepreneurial ambitions, established and future entrepreneurs, innovators and also representatives from governmental institutions and policy-making organizations.

ACKNOWLEDGEMENT TO REVIEWERS

The Editors gratefully acknowledge the assistance of Dr. Jon Wulff Petersen and Jeff Skinner, who reviewed contributions and selected them for publication in the Proceedings of the 12th International Technology Transfer Conference.















CONFERENCE IS ORGANIZED BY

The main organizer of the 12th ITTC Conference is Jožef Stefan Institute.



Institut "Jožef Stefan", Ljubljana, Slovenija

The 12th ITTC Conference is organized in collaboration with the International multiconference Information Society (IS2019). The 12th ITTC Co-organization partners are:

Slovenian Association of Technology Transfer professionals (SI-TT)	
University of Ljubljana	
University of Maribor	
University of Primorska	
National Institute of Chemistry	
National Institute of Biology	
Agricultural Institute of Slovenia	
Slovenian Innovation Hub - European Economic Interest Grouping, SIH EEIG	
RDA Koroška - Regional Development Agency for Koroška	
Development Centre Novo mesto	
Regional Development Agency ROD Ajdovščina	
Centre of Excellence for Integrated Approaches in Chemistry and Biology of Proteins	
Faculty of Information Studies	
Zavod C-TCS (Toolmakers cluster of Slovenia)	

CONFERENCE IS FUNDED BY

<p>Consortium for Technology Transfer</p>	<div data-bbox="639 324 979 396">  <p>REPUBLIC OF SLOVENIA MINISTRY OF EDUCATION, SCIENCE AND SPORT</p> </div> <div data-bbox="639 443 979 573">  <p>EUROPEAN UNION EUROPEAN REGIONAL DEVELOPMENT FUND INVESTING IN YOUR FUTURE</p> </div> <div data-bbox="1007 443 1225 604">  <p>KONZORCIJ ZA PRENOS TEHNOLOGIJ IZ JRO V GOSPODARSTVO</p> </div> <p>Investment is co-financed by the Republic of Slovenia and the European Union under the European Regional Development Fund.</p>
<p>Project SIO 2018 - 2019</p>	<div data-bbox="639 770 884 864">  <p>EVROPSKA UNIJA EVROPSKI SKLAD ZA REGIONALNI RAZVOJ NAJDEŠA V VAŠO PRIHODNOST</p> </div> <div data-bbox="639 902 884 949">  <p>REPUBLIKA SLOVENIJA MINISTRSTVO ZA IZOBRAŽEVANJE, ZNANOST IN ŠPORT</p> </div> <div data-bbox="639 994 884 1072">  <p>SPIRIT SLOVENIA</p> </div> <p>The event is co-financed by the Republic of Slovenia and the European Union under the European Regional Development Fund.</p>
<p>Enterprise Europe Network</p>	<div data-bbox="608 1128 973 1276">  <p>enterprise europe network</p> <p>Business Support on Your Doorstep</p>  <p>European Commission</p> </div>
<p>Project Co-Create</p>	<div data-bbox="608 1335 868 1449">  <p>Interreg Mediterranean</p>  <p>Co-Create</p> </div> <p>Project co-financed by the European Regional Development Fund</p>

DAY 1

OVERVIEW

9 October 2019

JSI, Ljubljana, Slovenia

Location: Kolar Hall (tbc)

08:30 – 09:00	Registration & Welcome Coffee
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09:00 – 09:15	Welcome Addresses
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09:15 – 10:15	Effective Marketing (+ Good Practice Example)
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10:15 – 11:15	TTO Continuous Improvement Cycle
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11:15 – 11:40	Coffee Break
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11:40 – 13:00	Life after Patent (Dos and Don'ts)
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13:00 – 13:30	Conclusions
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WELCOME ADDRESSES

From 9:00 to 09:15

Peter Alešnik, Head of Knowledge and Technology Transfer Office, University of Maribor

EFFECTIVE MARKETING (+ GOOD PRACTICE EXAMPLE)

From 09:15 to 10:15

Moderators:

Urša Jerše, Assistant Secretary General for Knowledge transfer, University of Ljubljana, Knowledge Transfer Office

Dr. Urška Fric, Head of Technology Transfer Office, Faculty of Information Studies in Novo mesto, Institute for Innovation and Technology in Regional Development

Shorten the Distance between Invention and Innovation

Giovanni Cristiano Piani, PhD., Università degli Studi di Trieste, Italy

The Common Problems of Technology Transfer Marketing

Dolores Modic, PhD., Nord University Business School, Norway

Open Discussion and Questions

TTO CONTINUOUS IMPROVEMENT CYCLE

From 10:15 to 11:15

Moderators:

Tomaž Bizjak, Project Coordinator, National Institute of Chemistry

Sebastjan Rosa, Senior Project Manager at Technology Transfer Office, University of Primorska

Developing Skills and Capacities in Knowledge and Technology Transfer

Bernhard Koch, Head Technology Transfer, Research Promotion, Innovations & Technology Transfer, BOKU University

Open Discussion and Questions

LIFE AFTER PATENT (Dos and Don'ts)

From 11:40 to 13:00

Moderators:

Jure Vindišar, MSc, Assistant Director for Technology Transfer, National Institute of Biology

Nina Tomić, Head of Technology Transfer Office, Agricultural Institute of Slovenia

Peter Alešnik, Head of office, Knowledge and Technology Transfer Office, University of Maribor

What Else Can we Do in the Scope of Knowledge and Technology Transfer Activities?

Bernhard Koch, Head Technology Transfer, Research Promotion, Innovations & Technology Transfer, BOKU University

Giovanni Cristiano Piani, PhD., Università degli Studi di Trieste, Italy

Open Discussion and Questions**CONCLUSIONS**

From 13:00 to 13:30

Giovanni Cristiano Piani, PhD., Università degli Studi di Trieste, Italy

Bernhard Koch, Head Technology Transfer, Research Promotion, Innovations & Technology Transfer, BOKU University

Open Discussion and Questions

DAY 2

OVERVIEW

10 October 2019

JSI, Ljubljana, Slovenia

Location: Main Lecture room at the Jožef Stefan Institute (A-building) / Glavna predavalnica IJS (A-stavba)

08:30 – 09:00	Registration & Welcome Coffee
09:00 – 09:20	Welcome Addresses
09:20 – 11:00	Technology Transfer as a System in Research Institutions
11:00 – 11:30	Morning Coffee
11:30 – 13:00	Best Innovation with Business Proposition: Pitch Competition
13:00 – 13:45	Light Lunch
13:00 – 13:45	Evaluation Commission Meeting – Winner Selection. Non-public Part of the Event.
13:45 – 14:00	Announcement of the Winner
14:00 - 14:15	Welcome Coffee after Lunch
14:15 – 14:30	Digital Innovation Hubs in Slovenia Welcoming Session
14:30 – 15:30	State of Play in Slovenia's Digitalization
15:30 – 16:30	Presentation of DIHs and their Services
16:30 – 17:00	Aligning the DIH Services with the Needs of Companies on Digitalization
17:00	Farewell Cocktail

WELCOME ADDRESSES AND INTRODUCTORY SESSION PROGRAMME

From 9:00 to 09:20

Dr. Jernej Štromajer, Secretary General, Ministry of Education, Science and Sport, Science Directorate

JSI and its KT System

Prof. Dr. Jadran Lenarčič, Director General, JSI

Slovenian KT system

Dr. Špela Stres, Head of Center for Technology Transfer and Innovation, JSI

INTRODUCTORY SESSION

CONTRIBUTION

Slovenian KT system

Špela Stres, Head of Center for Technology Transfer and Innovation, JSI

Introduction

The International Technology Transfer Conference (ITTC) has been organized by the **Jožef Stefan Institute** (Center for Technology Transfer and Innovation) for the 12th year in a row. The first ITTC took place in 2008.

The Center for Technology Transfer and Innovation at the Jožef Stefan Institute is currently the coordinator of the project KTT (2017-2022), the coordinator of Enterprise Europe Network Slovenia, and is a financially independent unit involved in 12 projects. This year the conference has been organized with support of partners from the KTT project (2017-2022).

The previous project KTT, from 2013 through 2014, was the first project within which technology transfer in Slovenia was systematically funded from national funds. There were 6 partners involved, but the project only lasted for 17 months.

The current KTT project, 2017-2022, comprises 8 partners, all public research organizations (PROs), represented by their respective technology transfer offices (TTOs), namely, 4 leading institutes and 4 renowned universities.

The project's mission is twofold: the strengthening of links and increasing the cooperation of PROs and industry and the strengthening the competences of TTOs, researchers and enterprises. Most (80%+) of the finances go to human resource financing.

Support of Slovenian Industry

The goal of the KTT project is to support the industry in Slovenia, rather than an outflow of knowledge abroad or great profit for PROs. Collaboration between PROs and SMEs in Slovenia should be strengthened. However, Slovenian companies prefer contract and collaborative cooperation to buying licenses and patent rights. Also, a relatively low added value per employee and a low profit margin are not stimulating the research-industry collaboration.

Investing into Intellectual Property Rights

Despite the above stated it is important to invest in patents and other forms of intellectual property (IP). Investments in intellectual property increases licensing opportunities and the IP position of the Slovenian knowledge worldwide.

Strengthening the Competences of TTOs

The goal of the KTT project is to establish technology transfer centers in Slovenia as integral parts of PROs, which shall, first and foremost, strive to serve the interests of the researcher and the PRO. The TTOs shall assist the researcher throughout the entire procedure of the industry-research cooperation, by raising competences and educating, taking care of legal and administrative issues, and promote research achievements among the industry. Lastly, TTOs shall support the cooperation already established by research groups.

Project goals and results

The overall project goals for 5 years (until July 2022) include 44 patent applications at patent offices that perform full examination; 308,200.00 EUR of income from license agreements; 8,203,000.00 EUR income from contract and collaborative research agreements, and 44 new Slovenian companies served.

The consortium has already delivered the required results for the new companies served and the license agreements key performance indicators, and there are reasonably optimistic results achieved in the first two out of five years in terms of number of patent applications and contract and collaborative research relations (50% and 40% of the final mark achieved, respectively).

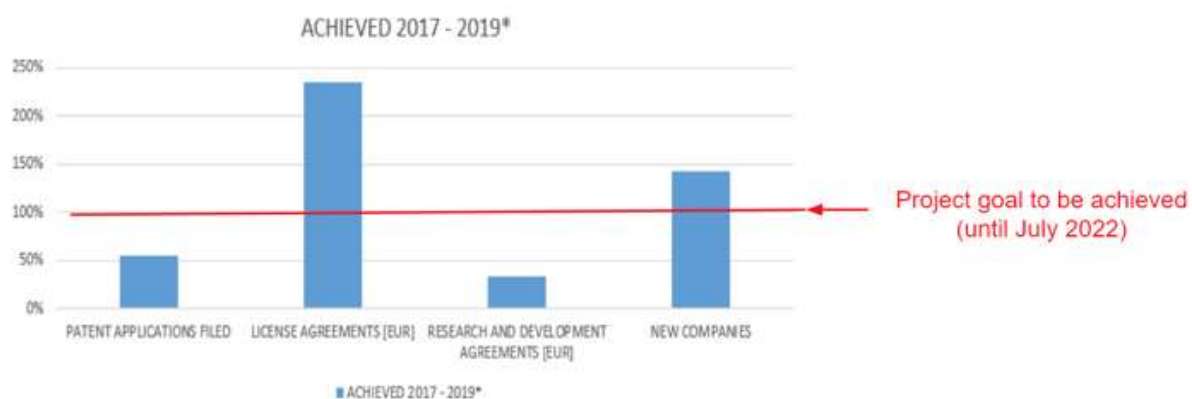


Figure 1: A comparison of 5-year goals and the 2-year performance of the KTT project.

Possibilities for Improvement

Even though the project is running smoothly from the key performance indicators point of view, there are some issues that require improvements. Firstly, projects funded from the ERDF funds, such as KTT 2017-2022, often have relatively **complicated reporting**, which represents an **administrative work load** for TT managers and results in a diminished amount of financing spent from the ERDF in the project as a whole. Secondly, in the Slovenian case, the **Proof of concept fund** is not established, which prevents research entrepreneurs to develop their inventions further towards the market. Thirdly, there is a lack of support for **spinouts**. Start-ups can enter easily into a technology park; in contrast, a spinout has to carry out many internal procedures within the PRO from which it originates in order to start operations. On the other hand the scale up phase is well supported (for example, by the national project SIO). Fourthly, the Slovenian legislature (ZIDR) provides **incentives for inventors**, when the invention is licensed or sold (min. 20% of gross royalty, in practice around 33% of net royalty), however, there is a lack of **recognition for TT managers** (compared to inventors).

Last but not least, technology transfer needs **stable funding**, as a TTO is generally **not able to finance itself** – apart from the rare cases where industry buys high licenses (a large license can support a TTO for up to 10 years), and this is not applicable to Slovenia, as already previously discussed. In case when the TTO is supported by the government, it is important that there is good cooperation between the TTO and the government (not just administrative supervision but also **content guidelines** for future work), including the development of a **toolbox for successful technology transfer** as a collection of contracts, good practices and business models.

In essence, a TTO is an **important part of the innovation chain** and has to be recognized as such.

We would like to thank the Ministry MIZŠ for the support.

SESSION 1: TECHNOLOGY TRANSFER AS SYSTEM IN RESEARCH INSTITUTIONS

PROGRAMME

The Cambridge Ecosystem – Is it a Model?

David Secher, Cambridge KT Ltd.

Irish Concept: Centralization of KT Concept vs. Dispersion of Activities and Execution

Siobhan Horan, Programme Manager, Knowledge Transfer Ireland

How JRC Sees the Specifics of the KT System in South-Eastern Europe

Giancarlo Caratti, Head of Intellectual Property and Technology Transfer at the European Commission, DG Joint Research Centre

Establishing a KT System

Andrej Simončič, Director, Agricultural Institute of Slovenia

Slovenia and Systematic Support for the KT System

Tomaž Boh, Director General, Ministry of Education, Science and Sport, Science Directorate

How to Support “Proof of concept” with Financial Instruments – EU Initiatives

Natalija Stošički, Director, SID banka; Andrea Marcello Grimani Giustinian, European Investment Fund (EIF)

Remarks and Discussion:

Collaboration with Multinationals: National vs International KT System for the National Economy

Tjwan Tan, The Netherlands Innovation Management Capacity Coach, Member European Sector Group BioChemTech

Towards European R&I Valorization Strategy

Iiro Eerola, Policy Officer, European Commission, DG Research & Innovation, RTD/F/02 Valorization Policies & IPR

The Attitude of Venture Capital towards Researchers as Entrepreneurs

Jakob Gajšek, Director, Ljubljana University Incubator, Slovenia

Round table discussion:

- how management of PROs supports technology transfer;
- what are the trends of TT, purpose, execution, inclusion in innovation and entrepreneurship ecosystems;
- recommendations for the IP (protection, management of portfolios, strategic landscaping and partnering...);
- status of Slovenian TT; analysis and possible improvements, recommendations to policy makers, PROs and industry.

Open Discussion and Questions

PRESENTERS

David Secher – The Cambridge Ecosystem – is it a Model?

David Secher is a specialist in research commercialization. He was awarded the Queen's Award for Enterprise Promotion in 2007 for his work as the co-founder and Chairman of Praxis (now PraxisAuril, of which he is now Patron) and the first chief executive of the N8 Group, a group of universities in the north of England. He is now the Principal of Cambridge Knowledge Transfer (a KT and Interim Management consultancy company) and a Life Fellow of Gonville and Caius College, Cambridge. He is also a non-executive director of Crossword Cybersecurity plc and the Chair of Fitzwilliam Museum Enterprises Ltd. He is an elected member of the University of Cambridge Finance Committee.

Siobhan Horan – Irish concept: centralization of KT concept vs. Dispersion of activities and execution

Siobhan Horan is Programme Manager for the Technology Transfer Strengthening Initiative at Knowledge Transfer Ireland, the national office, responsible for policy, practice and the performance of the Irish technology transfer system. Her broad experience includes international advisory, support to companies and in international trade.

Giancarlo Caratti – How JRC sees the specifics of the KT system in South-Eastern Europe

Giancarlo Caratti is a Head for Intellectual Property and Technology Transfer at the DG Joint Research Centre, where he manages the IPR portfolio and promotes knowledge transfer. He was appointed by the President of the European Commission for Deputy Commissioner General in World Expo Milano 2015 and has had several assignments in the frame of European Commission since 1986, with more than 60 publications in international conferences, and is active on a technical field of expertise.

Andrej Simončič – Establishing a KT system

Andrej Simončič has been Director of Agricultural Institute of Slovenia since 2003, where he is also a researcher in the field of plant health, plant protection products and environment protection. He is a member of European Food Safety Authority, considered to be one of the top experts on the agriculture field not only in Slovenia, but also abroad.

Tomaž Boh – Slovenia and systematic support for the KT system

Tomaž Boh has been employed at the Ministry of Education, Science and Sport since 2009, where he was state secretary from 2015 to 2018. Previously, he was employed for two years at the Slovenian Research Agency, where he was responsible for making analyses in the area of science policy, while also monitoring indicators of research and innovation. He is currently Director-General at Science Directorate at the Ministry of Education, Science and Sport.

Natalija Stošicki (& Grimani Giustinian) (EIF) – How to support "Proof of concept" with financial instruments – EU initiatives

Natalija Stošicki is a Director in Product development and EU programs department at the SID Bank, national promotional and development bank, where she is responsible for development of financial instruments and banking programs for support of research, development, innovation and digitalization of Slovene SMEs. She is a member of several international committees and member of the supervisory board of Kapitalska družba.

Andrea Marcello Grimaldi Giustinian is Mandate Manager at European Investment Fund and one of his many responsibilities is managing about 400 mio EUR dedicated to investment programs focused on technology transfer. Although he works in financial sector now, he made great contributions in the field of life sciences.

Tjwan Tan – Collaboration with multinationals: national vs international KT system for the national economy

Tjwan Tan has been liaison officer and innovation coach for the Enterprise Europe Network (EEN) for more than 10 years. His role was vital in establishing not only EEN in the Netherlands, but also for several companies in the region in last decades. Tjwan has several publications and patents to his name, he strongly focuses on innovation and valorization processes, life sciences and key enabling technologies (KETs). He believes in the ‘Human Factor Innovation’.

Iiro Eerola – Towards European R&I Valorization Strategy

Iiro Eerola is Policy Officer in the Unit for Valorization Policies and IPR, in the Prosperity Directorate of DG Research and Innovation, European Commission. Medical Doctor by training, he holds a doctorate in medicine. Before joining the Commission services in 2004 he worked in the Academy of Finland, in the Christian Duve Institute of Cellular Pathology & Université Catholique de Louvain, Brussels, Belgium and at the University of Turku, Finland.

Jakob Gajšek – The attitude of venture capital towards researchers as entrepreneurs

Jakob Gajšek is Director of the Ljubljana University Incubator, with the focus on boosting entrepreneurship amongst the student and academic staff and providing invaluable support with connecting them with the start-up ecosystem. He is one of co-founders of ABC Accelerator and top expert in the field of supporting the new, ground-breaking projects to take off.

CONTRIBUTIONS

The Cambridge Ecosystem – Is it a Model?

Talk by Dr. David Secher RTTP, Patron, PraxisAuril and Associate, Cambridge Enterprise, as recorded by Dr. Špela Stres

Introduction

The mission of the University of Cambridge is to contribute to society through the pursuit of education, learning, and research at the highest international levels of excellence.

The story of what happened in Cambridge is very interesting. Cambridge is an important example of how important technology transfer has become. An important mind shift at Cambridge was achieved as they became to be aware that even though they center their work around research activities, they actually work for society as a whole.

But the question is, is the Cambridge Ecosystem a model? Is it a system you can take off-the-shelf and make it work in a different environment for different public research institutions and universities worldwide? How is this connected to the Cambridge recognition? So, is it about teaching?

In fact, there are many ways a university contributes to society, including awarding graduate degrees. Other ways of transfer to society is through published research, collaborative & sponsored research for the industry, and commercialization.

Commercialization Paths

The commercialization of research results needs to occur for the results to reach the society. Commercial channels include: Academic consultancy, Licensing of intellectual property, and Creation of spinout companies. Licensing and spinouts are the main channels for Cambridge Enterprise, however, academic consultancy and commercial use of facilities are also growing fast and it is important that a TTO takes care of the consultancy agreements.

Cambridge Enterprise mission was defined while it was created as a Ltd. company owned by the University. The objectives of Cambridge Enterprise, in the order of precedence, were identified to be: 1. to aid the transfer of knowledge from the University via commercialization; 2. to help staff and students in making their ideas more commercially successful; 3. to produce a financial return for inventors, departments and the University.

However, is it the ultimate goal that universities should earn money from their inventions? Commercialization might bring benefits to a public research organization; however, it is also connected with costs. It is known that 87% of US TTOs lose money, and even Stanford Technology Transfer Office, a rare example of extreme success, has a limited commercial income, which represents only a small part of the University's research budget (4%). Anyhow, companies started by Stanford alumni generate \$3 billion USD in annual revenues and 5.4 million jobs. Some universities have great revenues – the same we read about lottery tickets. Also, it needs to be clarified that it is the spinouts of Stanford that are creating millions of income, not the public research institution University of Stanford itself.

Cambridge Commercialization Development Phases

Cambridge has its history of technology transfer activities. In the 1960's it was an academic university island in a remote agricultural region. Today the Cambridge cluster comprises more than 5000 technology-based firms and more than 61,000 people are employed in that cluster, with more than 15.5 billion pounds in total revenues from Cambridge cluster – and that in a city of 120,000 people! MIT research shows that Cambridge comes third in the list of top ten universities, identified as having created/supported the world's most successful innovation ecosystem.

This is not surprising. The history of Cambridge innovation spans into the time of its beginnings, through the Cambridge University Press, established in 1534, the Pye telereceivers from 1896 and Cambridge

instruments in 1881, to the amazing innovation of today. It can be said that all and any successful knowledge ecosystems share common features, involving a knowledge intensive university (or public research institution) a decentralized structure and the fact that its graduates tend to stay around. But for Cambridge, the “Cambridge phenomenon” (as presented in a newly published book) started to develop in its present form during the 1960’s, when Cambridge Consultants was formed “to put the brains of Cambridge at the disposal of industry” and the Mott Report in 1969 analyzed the reasons for rejection of the IBM’s presence in the city, when a creation of a technology park by IBM was not accepted at that time.

So, in principle the development of Cambridge University’s policy towards commercialization can be seen as happening in three separate phases:

1. before 1995: Benign neglect. University does nothing, but does not stop anything either. Academics owned their IP (“Professors’ Privilege”).
2. 1995 – 2003: Passive support. Academics owned their IP but the University supported them exploiting it for commercial gain.
3. 2003 – Present: Active support. IP owned by University which provides active support (people, money) to help academics become successful.

Every successful knowledge ecosystem contains a knowledge center and for Cambridge University this was the creation of Cambridge Enterprise, where the Technology Transfer people can work with the academics who wish to be involved in commercialization. But the limiting factor is not a change of rules but a change of mindset and attitude. This third and last phase enabled many of the Cambridge University’s commercial successes (or the lucky lottery winners): from Humira’s genetically engineered top 10 selling drugs in the world, through chips in mobile phones, to DNA sequencing, and attracted many big companies and huge inward investments, from Amazon, Huawei, Apple, Astra Zeneca to Qualcomm and Brother.

In fact, we can conclude that creative chaos is a sign of success. As pointed out by Michael Cohen, from UC Berkeley, in his *Strategies for Developing University Innovation Ecosystems*: “...the leading (university innovation) ecosystems have relatively decentralized entrepreneurship-related activities, not top-down centralized control of activities.”

Another success factor is successful serial entrepreneurs, who remain in the Cambridge area to pass on their knowledge and act as role models - scientists become entrepreneurs; and they form – as role models - new generations of entrepreneurs, a goal of many scientists. PraxisAuril is of crucial importance. As a National Association with international reach, founded in 2002, with 173 member organizations, 5,300 TT practitioners trained in 40 countries, organizing conferences, mentoring, advocacy, networking is also very important as a founder member of ATTP, supporting the RTTP qualification for the technology transfer professionals.

Conclusion

To conclude, Cambridge (and Stanford and MIT) are extreme examples. Cambridge works in Cambridge, it is not possible to simply transpose its innovation system to a different setting. It is not possible to copy Cambridge. Other places have different cultures, different environments, different legal and regulatory constraints, different resources and different objectives. It is important to work out what is appropriate in your environment, working with governments and companies. Every public research institution should work out its own way on how to be themselves.

Irish Concept: Centralization of KT Concept vs. Dispersion of Activities and Execution

Siobhan Horan, Programme Manager, Knowledge Transfer Ireland

In the late 1990s Ireland made a strategic decision to invest significantly in research undertaken in its Higher Education Institutes (HEIs). Major initiatives under the National Development Plan (NDP) 2000 – 2006 included the foundation and funding of Science Foundation Ireland (SFI) and the expansion of the Higher Education Authority's Programme for Research in Third Level Institutions.

Prior to the establishment of the Technology Transfer Strengthening Initiative (TTSI) program, technology transfer within the State was largely confined to a small number of individuals, with a range of experience levels, in the larger universities. The TTOs, or Industrial Liaison Offices (ILOs), where they existed, were under-resourced and, as a result, lacked the capacity to engage effectively with either the research community or with business. TTSI was launched in 2007 by Enterprise Ireland with the goal of "driving the development of a professional technology transfer system at (the) nation's public research institutions". It enabled the start of a process of development of TTOs with appropriate skills, and access to funding for the management of intellectual property, to facilitate meaningful interactions with business.

Contemporaneous with the TTSI program, in late 2013 Knowledge Transfer Ireland (KTI) was created as the national office with leadership and oversight for knowledge transfer activities in Ireland. KTI is supported by Enterprise Ireland with the Irish Universities Association. *KTI helps business to benefit from access to Irish expertise and technology by making it simple to connect and engage with the research base.*

The National IP Protocol¹ is the framework for engagement of enterprises, spinouts, and Research Performing Organizations (RPOs) with the research base. The IP protocol was updated in 2019 and sets out the Government policies to encourage industry to benefit from publicly-funded research, describes good practice and practical arrangements for research engagement and commercialization. The IP Protocol includes a chapter on spinout company formation in addition to chapters on intellectual property, licensing and research collaboration. It is about helping industry, from start-ups and small and medium enterprises to multinational corporations, entrepreneurs and investors to access the research and development carried out in Ireland's universities, institutes of technology and other public research institutions (collectively termed 'Research Performing Organizations' or RPOs). It sets out the Government's policy for research commercialization and describes the practical arrangements for this to happen. The IP Protocol also sets expectations – on RPOs and on parties wishing to engage with RPOs. Knowledge Transfer Ireland is responsible for developing and updating the IP Protocol. This process is informed by practice and is based on extensive consultation with people involved across the ecosystem in the commercialization of research in Ireland. The Protocol is complemented by a suite of Model Agreements and associated Practical Guides which can be used as a starting point for drafting and negotiating the contracts that underpin commercial arrangements between industry, entrepreneurs, investors and the research base.

KTI collects and analyses data from Ireland's universities, Institutes of Technology and other State-funded research organizations, to produce the national Annual Knowledge Transfer Survey (AKTS). In the AKTS for the year 2018 the data was collected from Ireland's seven Universities, fourteen Institutes of Technology, and five further institutions engaged in research.

According to the AKTS in 2018² activity and output measures are stable per annum with trends suggesting average figures of 470 invention disclosures and approximately 120 priority patent applications per annum. The annual rate of spinout company formation is around 20-30 new companies per year. Irish RPOs on average create 5 spinout companies per €20 million research expenditure, which is comparable to many international systems. There were 119 active spinouts at the end of 2018 and

¹ <https://www.knowledgetransferireland.com/Reports-Publications/>

² <https://www.knowledgetransferireland.com/Reports-Publications/KTI-Review-and-Annual-Knowledge-Transfer-Survey-2018.pdf>

further three spinouts were acquired during the year. It is estimated that the active spinouts employ over 900 people. The number of licenses, options and assignments executed is, on average, around 200 per year. In terms of R&D engagement with companies there are around 2,000 new agreements per year. To generate these outputs there is significant work undertaken within the TTOs in the RPOs. The role includes: supporting the RPO in preparation of funding proposals; negotiating a range of contracts with industry relating to collaboration and consultancy services; evaluating new intellectual property, IP protection and management, licensing, spinout company creation, managing incubation facilities, student enterprise training and building KT networks.

ABSTRACT: Slovenia and Systematic Support for the KT System

Tomaž Boh, Director General, Ministry of Education, Science and Sport, Science Directorate

Public research organizations (PROs) are aware of their mission, which includes also transferring the knowledge to society. Examples of working and efficient innovation systems from Stanford and Ireland are inspiring and recognized as suitable and operative innovation ecosystems crucial to support and realize the said mission of PROs. The Ministry of Education, Science and Sport is actively pushing forward technology transfer and understands the importance of TTOs acting as internal structures of PROs, being responsible for quality of contacts, contracts and revenues from national and international collaborations between PROs and industry as well as enabling reliable engagement with other stakeholders within the innovation ecosystem.

In 2017 the governmental management of technology transfer was moved from the Ministry of Economic Development and Technology to the Ministry of Education, Science and Sport along with quite substantial changes made inside the government towards stronger involvement of TTOs within the innovation ecosystem. A Consortium of Technology Transfer 2017 - 2022 (KTT) was established connecting the TTOs from eight biggest and most important Slovenian PROs. The general mission of KTT is strengthening the links and increasing the cooperation between the PROs and industry as well as strengthening the competences of TTOs, researchers and enterprises. Investment is co-financed by the Republic of Slovenia and the European Union under the European Regional Development Fund - consequently there is substantial and mid-term financing for TT activities for the first time in Slovenia. The most important goal is to develop a “knowledge transfer society” through a two-level operation: implementation of project at multi-institutional level and at the level of individual institutions. The aim is to improve collaboration and mutual learning of different TTOs from different PROs at the national level as well as to establish institutionalized TT units employing a number of TT professionals.

KTT is quite a stable system that is constantly improving over time and, most importantly, reaching the goals in terms of protection and marketing of PRO-owned intellectual property. In the next perspective it is planned to continue supporting TT along with building and improving the total ecosystem, since the TT is more and more recognized by the government as an important area within the innovation system. The ministry is optimistic that in the future it will be possible to establish an innovation system as efficient as these systems are in Western Europe.

How to Support “Proof of concept” with Financial Instruments – EU Initiatives

Natalija Stošicki, Director, SID banka; Andrea Marcello Grimani Giustinian, European Investment Fund (EIF)

Possible establishment of the support of “Proof of concept” at the national level in Slovenia should be related to at least three important topics that will be further addressed: (i) identifying good practices from abroad, (ii) general concept of technology transfer (TT) initiative for the Central and Eastern Europe (CEE) including Slovenia, and (iii) views of SID banka – the Slovenian promotional development and export bank in relation to CEETT initiative.

ITAtech as a Model System for Establishment of Proof-of-Concept Funding in Central and Eastern Europe (CEE) Countries

In 2015 a technology-transfer financing gap was identified in Italy summarizing certain specifics related to the Innovation, Research and Development, such as:

- a stark imbalance between the high quality of research and vibrant manufacturing environment on one hand, and a level of commercialization of R&D much lower than the EU average on the other;
- Italy is 7th worldwide in terms of production of scientific papers but only 24th in total venture capital (VC) investments (a proxy for innovation finance), presenting a very significant gap relative to peer countries like France and Germany;
- a poor dissemination of the "public procurement" innovation (according to the World Economic Forum, Italy was at the 114th place in the world in terms of public demand for technologically advanced products and fragmentation of spending on a variety of subjects that limit the necessary economies of scale);
- Corporate and Large Corporate organisations are not sufficiently geared towards open innovation and have R&D rates lower than competitors of the most advanced countries. Although Venture Capital investments do not necessarily derive from TT initiatives, they represent a good proxy of the level of development of the ecosystem for innovation and of how much basic research is translated into commercial activities;

In 2016 a dedicated investment platform ITAtech supporting technology transfer (Tech Transfer) in Italy was launched by the European Investment Fund (EIF) and the Italian deposits and loans fund (CDP) joining forces to enhance access to equity and innovation investments for businesses - from seed and start-up stages to growth/expansion, including the commercialization of intellectual property (IP) developed by leading Italian research institutions. ITAtech is the first example of a tailored investment program under the EIF-NPI Equity Platform, a new collaborative initiative recently launched by the EIF to promote knowledge sharing and best practices between EIF and national promotional institutions (NPIs) or banks (NPBs) across EU Member States.

EIF and CDP have committed up to 200 million EUR to finance ITAtech, which are managed by EIF and open to other investors. Under ITAtech a portfolio of Tech Transfer investment funds was created, investing, catalyzing and accelerating the commercialization of IP rights with a technological content and the translation of research and innovation into new businesses. ITAtech's funds are Vertis, Sofinnoca TelethonFund, Poli360, Progress Tech Transfer and Eureka! Venture. These funds are mostly focused on investments into specific technical areas (e.g. robotics, rare and genetic diseases, advanced manufacturing, sustainability projects etc.) and their deal flow usually originates from specific Italian research organizations, universities and institutes active at the above-mentioned technical areas.

In 2018 the Global Innovation Index ranked Italy high above the average of CEE countries in terms of VC deals, university/industry collaboration, while the gross expenditure on research and development remained comparable to CEE countries.

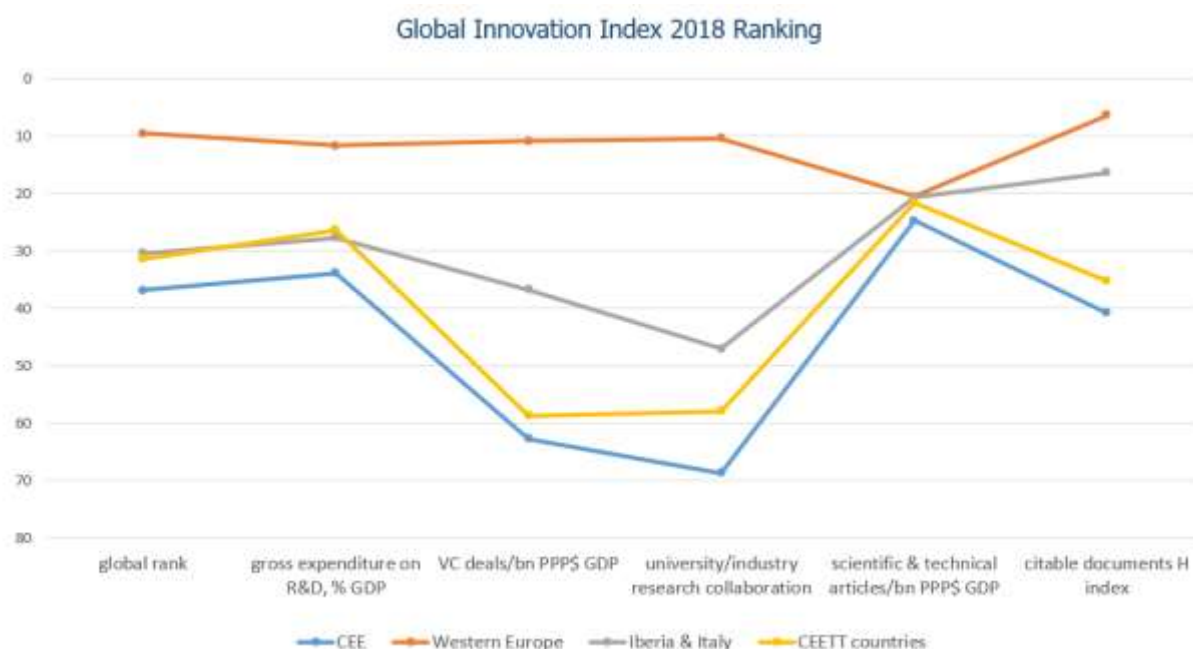


Figure 2: Global Innovation Index 2018 Ranking of Central and Eastern Europe countries (CEE), Central Eastern Europe countries included into the Technology Transfer initiative (CEETT), Iberia & Italy and Western Europe countries.

The Concept of TT Initiative for CEE (CEETT):

CEE countries still face Innovation, Research and Development and TT gap specifics similar to Italy in 2015. The establishment of ITAtech Equity Platform in 2016 resulted in better ranks of “VC deals” and “university - industry collaborations” in Italy in 2018 and this is speaking in favor of using the Italian approach launched by EIF and CDP as a model system to implement similar platforms also in CEETT countries. The CEE equity market is still lagging behind the European average, both generally, and specifically in VC. CEE represented only 2% of the total value of European VC investments in 2017.

Therefore the Concept of TT initiative for CEE (CEETT) based on Italian example is relevant to: accelerate the commercialization of the region’s R&D; foster the establishment of leading professional TT teams; generate economic returns for all stakeholders involved; develop a TT ecosystem by complementing existing TT infrastructure (TTO activities, university-industry collaboration, etc.) and advancing it; increasing the levels of equity investments made into early stage enterprises; providing deal flow to, and complementarity with, other equity initiatives; and supporting cross-border links and collaboration between research centers.

The SID banka View on CEETT Initiative:

SID banka as the founding member of the EIF-NPB Equity Platform signed a 15-year strategic partnership agreement with EIF for equity and quasi equity financing of Slovene companies in December 2017 collecting 100 mio EUR in the SEGIP program (50 mio € SID banka + 50 mio € EIF) for investments via PE investment funds into Slovenian companies in growth phase and the capacity building.

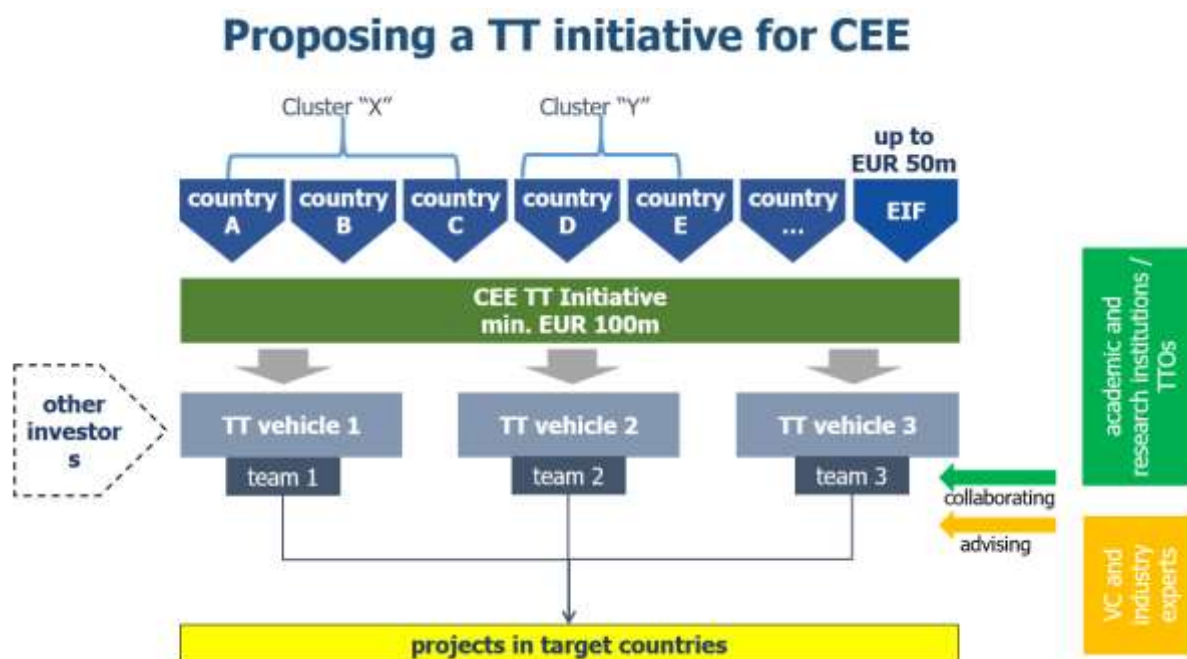


Figure 3: Schematic representation of the Central and Eastern Europe Technology Transfer (CEETT) initiative.

However, there is a market gap in Slovenia for financing PoC/TT, seed & early stage companies, since PoC/TT via financial instruments is not covered within the implementation of the EU Cohesion Policy 2014-2020 in Slovenia. The next EU Cohesion Policy 2021-2027 will have to address the question 'How to do more with less funds'. In this respect we expect more aligned use of grants with impact goals and the increased role of financial instruments. The need for public intervention to help developing the market is obvious in order to lower the initial risks of investors. It is important to understand that PoC/TT is not a typical bank product - the risk is too high to act on a stand-alone basis.

In regards to CEETT initiative there are challenges for SID banka, for example changing the mindset, establishing the evaluation of risk and CRR weights on capital, how to cover risk of financing PoC/TT and Banking regulation (exposure limits) etc. And there are also opportunities and benefits for SID bank in terms of mitigating risk exposure by CEETT platform investment, risk diversification and risk sharing with EIF; also the cohesion 2021-2027 guarantee scheme and combining cohesion funds with the platform investments and blending financial instruments with grants (using grants as collateral) should be considered. There is a clear benefit of drawing on additional EU funds to put less pressure on national budget and multiplication of funding of Slovene PoC/TT projects by EIF (1,4x multiplication). Additional advantages are that CEETT initiative for Slovenia will include professional (EIF) eligible TT teams to evaluate PoC/TT commercial potential and enable clearer distinction between Slovene R&D projects that can be financed by financial instruments and commercialized, and those that will need support solely by grants. CEETT initiative will also reduce the "brain outflow" of perspective researchers from Slovenia.

SID banka supports the CEETT initiative. In order to establish a platform a 10 million EUR investment is required on a national level as well as the involvement of other NPBs in CEE region. SID banka will be further involved in screening for support, interests and demands of universities, institutes, TTOs, ministries and other stakeholders in order to establish further developments of the CEETT initiative.

Collaboration with Multinationals: National vs International KT System for the National Economy

Tjwan Tan of the Netherlands Chamber of Commerce and Liaison Officer of the Enterprise Europe Network

Wanna go fast, go by yourself

Wanna go far, then go together

Support of partnerships within the value chain

Introduction:

Different strategies can be pursued in order to implicate high-tech companies within an open innovation process. The strategies are mainly focused on start-ups and SMEs and how they are positioned within the value chain and how they can be connected with larger (global) operating companies. This lecture is part of a series about high-tech start-ups and innovation in general. The series is mainly focused on the valorization of Key Enabling Technologies (KETs), which can be regarded as one of the most disruptive and challenging topics of our modern times.

Business Clusters:

In the past newly established high-tech companies found their niche and right to exist in the so-called business cluster. A business cluster is a geographical location where enough resources and competences amass to reach a critical threshold, giving it a key position in a given economic branch of activity, and with a decisive sustainable competitive advantage over other places, or even a world supremacy in that field such as Silicon Valley or Hollywood (Michael Porter, *The Competitive Advantage of Nations*; 1990). As posted by John Spacey, 10 different types of business clusters can be distinguished, knowledge clusters being an example. (John Spacey, *Simplicable.com*; 2017) Nice examples are Silicon Valley and the Boston Biopharmaceutical cluster.

However due to globalization and the dramatic acceleration within our digital era various paradigm shifts have occurred and business clusters are no longer bound by their geographical location. These clusters can be identified in digital ecosystems, such as innovation fora, as communities of practice, or open innovation clusters.

Define your position in the Value Chain before you enter a Business Cluster:

As high-tech start-up or SME it is of utmost importance to define your position in the value chain. In other words: “Where do you fit in?” Regarding the outcome of scientific research this value chain stretches from fundamental science to market implementation. But it also goes far beyond market implementation and deals more and more with the needs and acceptance of the global society as a whole. Here Vision and Mission come in, and they have been further evaluated into concepts such as the Golden Circle model (Simon Sinek, *Start with Why*; 2009) and the Massive Transformative Purpose (MTP) as postulated by Ismail and Malone (Salim Ismail, Michael S. Malone; *Exponential Organizations*; 2014)

What is your proposition and for whom is it meant?

In order to define the position in the value chain, start-ups and SMEs have to investigate and precisely define their propositions: “That which you offer should fit what is needed”. It should be mentioned that companies may have a variety of different propositions to communicate. You may have a proposition for a certain market (niche), but also for your partners (strategic), financial group or independent interest group.



Figure 4: An example of a Value Chain (source: Paris S.Tjwan Tan)

Connection with large global operating corporates.

How do we connect high-tech SME/start-ups with larger global operation companies?

Within de Dutch Chamber of Commerce (KVK) and the Enterprise Europe Network (EEN) 2 types of open innovation challenges have been developed to connect small companies to larger. In all cases we strived for optimal PUSH - PULL dynamics between the foreseen partners.

Pull or Needs-and-Gaps analysis: In order to set an excellent challenge (request), the Needs&Gaps of larger corporates have to be precisely analyzed and brought into a technology request concept. Subsequently, the push, or proposition of the smaller company, should be well recognized and communicated.

Within the KVK the Enterprise Europe Network advisors developed a wide range of business tools and coaching programs in order to analyze the Needs&Gaps of large companies as well as defining the proposition of SMEs. Above all, programs were developed and experience and expertise gained dedicated to state the Vision and Mission for the future and position the companies.

Two examples of Open Innovation Support

KVK started as pilot (named Adventured) with 2 Business Challenge (BC) edition of large companies who defined their specific need in a Challenge. In 2019 about 9 BC editions were organized. Each BC edition takes about 6-8 weeks and will contain 6 – 10 different challenges of different larger organizations.

The open innovation platform that connects business challenges of corporates with the solution power of SMEs:

- Corporates pitch their innovation challenges on the platform³
- SMEs share their ideas in an open discussion chat line, with eachother and the corporate
- After 4 weeks the challenge will be closed and matches are made for further cooperation

Another activity contributing to the open innovation programs of larger companies: Last year the Dutch Enterprise Europe Network performed 3 of those programs. In this example Nouryon, a chemical company, is discussed. Nouryon (formerly known as AkzoNobel Specialty Chemicals) started the Imagine Chemistry Open Innovation program:

³ <https://youtu.be/b4L45TEt5tQ>

- 6 innovation challenges were translated into 6 technical request profiles and published in the EEN-database.
- Various expressions of interest of companies (SMEs) were forwarded to Nouryon.
- Some of these companies joined the Open Innovation FORUM discussion.
- As a result 4 companies were invited to join the final meeting in Gothenburg (Sweden).

ADDITIONAL MATERIAL

What Has Been Reported Upon Some Aspects of Technology Transfer

Giancarlo Caratti, Head of Intellectual Property and Technology Transfer at the European Commission, DG Joint Research Centre touched upon How JRC Sees the Specifics of the KT System in South-Eastern Europe.

There will be a huge event, the European Science Open Forum ESOF2020 in Trieste from 5 to 9 July next year where 100,000 visitors will be expected. The major scientific conference in Europe is taking place every other year. The geographical focus in Trieste will be on Central and Eastern Europe.

Data is becoming the new oil, and 90% of the future start-ups will likely be using artificial intelligence (AI). The nature of work will change: a recent report is showing that AI will penalize more some countries than others. In Slovenia, for instance, 24% to 28% of jobs are at risk. For Europe it is important to increase TT, in particular for disruptive Deep-Tech start-ups. They are more expensive to set up, but also longer lasting than Internet-based ones. There will be more opportunities to fund such activities in Horizon Europe. For countries or regions with limited financial resources on R&D, Smart Specialization Strategies are needed to make them focus on their competitive edges. Technology transfer must also be regarded an implementation tool of Smart Specialization Strategies and different sectors have different TT strategies and ecosystems. The European Commission has set up within the JRC in December 2018 a competence center on technology transfer, which is staffed by 10 specialists. Its mission is to provide a one-stop shop for EU/national/regional policies on technology transfer. It works on three main areas: capacity building, financial instruments and innovation ecosystems. For capacity building, the Centre is launching a project with DG NEAR to provide PoC support in the Western Balkans.

Andrej Simončič, Director, Agricultural Institute of Slovenia touched upon Establishing a KT System

Agricultural Institute of Slovenia is 120 years old. Its recent status as PRO was obtained in 1996. Twelve years ago, they reorganized and positioned a TTO as one of the organizational units within the Joint Services. Two years later, within the framework of the new reorganization, the activities of new technologies and knowledge transfer were placed in a new department, the Office for technologies and knowledge transfer. This was also due to joining the TT Consortium project (the KTT project) led by the Jožef Stefan Institute. The Agricultural Institute is aware that this is just the beginning and that due to the importance of this area, they will need to intensify their activities in the future.

Today the Agricultural Institute of Slovenia deals with the issues of modern agriculture and has broadened its activities to include the field of environmental protection and ecology. In the framework of its registered activities, the Institute primarily carries out the following tasks: (a) fundamental, applied, and developmental research; (b) expert tasks determined by statute and implementing regulations; (c) advisory, consulting, infrastructure-related and laboratory services, as well as the preparation of scientific studies; (d) the training and post-graduate education of researchers; control and assessment of the quality of agricultural products and other products used in agriculture and (e) the publication of acquired knowledge and the findings of research, expert, and control work.

The Institute currently employs a staff of over 200, including 95 researchers, of which 53 hold a PhD in science and 8 are “young researchers”. It should be mentioned that the Institute gets only 7 stable full-time FTE funds for research, other incomes are obtained on projects, tenders.

The majority of their activities and results are vital for the future development of Slovene agriculture and the society in broader sense: innovations in crop production and ecology, agricultural engineering, patents. There are however still many challenges in front of them for the future.

Iiro Eerola, Policy Officer in the Unit for Valorization Policies and IPR, in the Prosperity Directorate of DG Research and Innovation, European Commission touched upon Towards European R&I Valorization Strategy

As a summary Iiro Eerola pointed out that Horizon Europe will put emphasis on exploitation of the R&I results to achieve higher societal impact. This will be reflected in the Rules for participation. Beneficiaries need to make their best efforts to exploit results by themselves or by another legal entity. Exploitation by third parties will be encouraged. If the beneficiaries do not exploit the results themselves they need to make the results available to others using online platforms. The European Commission has recently established the Horizon Results Pilot Platform where Horizon 2020 project participants can present their results in an attractive manner and interested parties such as industry, investors, ministries or civil society organizations can look for results for exploitation. This Platform could be scaled-up in Horizon Europe to include results from thousands of projects⁴.

Another novelty in Horizon Europe is that if the exploitation is to occur outside the EU or associated countries the beneficiaries need to justify that the exploitation is still in the interest of the Union.

He also mentioned IP Booster, a professional IP management service funded by the Commission which is available for public research organizations looking to realize value out of their research results. The requirement is that the organization has a PIC-number meaning that they have participated in an EU-funded project. The service is available upon an application procedure for which there is rolling call with several cut-off dates per year⁵.

Jakob Gajšek, Director of Ljubljana University Incubator touched upon The attitude of venture capital towards researchers as entrepreneurs

As a summary, Mr. Gajšek drew together the key talking points of others in his panel. His main point was an appeal to everyone in the room, calling out for the recognition of European scientific achievements as perhaps the best chance Europe has to position itself as a global technological leader. Many other ecosystems, notably the United States and China, are pushing their technology development efforts, especially when it comes to commercializations of breakthrough achievements, at breakneck speeds while Europe, despite its unquestionable scientific prowess, somehow always lags behind. His call was to unify efforts and see that we cannot copy and paste best practices from elsewhere and expect them to work. We should find our own way, and develop our ecosystems into what they can be best, and take cues from outside to the extent to which they are helpful.

Siobhan Horan, Answer to the question of Tomaž Boh: In what relation is Enterprise Ireland with the government?

Technology Transfer was seen as an important national goal. IP was transferred to PROs from the government – HEIF – high innovation education fund – it signals very clearly from the ministries that TTOs must be established. The second important thing is the continuity – the funding is available constantly throughout the years. Apart from the funding there has been excellent dialog with the Ministry. Universities that together generated a common view on how the TT offices should look like. However, the government requested that PROs must setup TTOs and provided continuity - every year since 1999, when it allowed – although through a small part of university funding, certain calls for projects for technology transfer. Also, one of the objectives of PraxisAuril is to gather common views toward government. The real message is that a good dialog and interest from the government are needed to make a step forward in technology transfer.

⁴ <https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/horizon-results-platform>

⁵ <https://ipbooster.meta-group.com/>

SESSION 2: BEST INNOVATION WITH BUSINESS PROPOSITION: PITCH COMPETITION

PROGRAMME

From 11:30 to 13:00

Moderator:

Robert Blatnik, Senior Technology Manager | Spinnovator, Jožef Stefan Institute, Center for Technology Transfer and Innovation (CTT)

Evaluation commission:

- Tjwan Tan, Liaison Officer Enterprise Europe Network, The Netherlands Innovation Management Capacity Coach, Member European Sector Group BioChemTech
- Primož Kunaver, Director, Primum d.o.o.
- Roman Kužnar, Managing Director, RC IKT d.o.o.
- Iiro Eerola, Policy Officer, European Commission, DG Research & Innovation, RTD/F/02 Valorization Policies & IPR

Presentation of seven (7) selected business model proposals from public research labs to the technology transfer experts.

COURSE OF THE COMPETITION

Robert Blatnik, Jožef Stefan Institute, Center for Technology Transfer and Innovation (CTT)

Since the 1st pitch competition 10 years ago, the 11th competition for the best innovative project with business proposition from public research organizations aims at promoting the licensing and spinout business development at public research organizations. The selection of best innovative projects was initiated with a public call, which was open to authors of inventive technologies with a proposed business model for commercialization. Eligible applicants for the call are individuals, employed at PROs, which are developing innovative scientific-research ideas into a viable business model. Possible business models are either licensing the technology to industrial partners or commercialization in a spinout company. The teams and their applications with the proposed business models were evaluated by an international panel of experts. The experts evaluated the proposals in two phases. The 1st phase was the evaluation of written descriptions and the 2nd phase was the evaluation of the five-minute pitch at the Conference. The experts used the predetermined evaluation criteria which were already defined in the public call. The Criteria for evaluation are divided into six lots, which together account for total of 19 criteria. The criteria are presented in the table 1; each of the 19 criteria brings at the most 10 points. After the pitch the experts exchanged their views and opinions and selected the winner(s).

The traditional pitch competition, which this year had its 11th anniversary, stimulated seven innovative and entrepreneurial research teams to prepare their pitch and apply for competition. The members of seven teams have developed their technologies entirely or partly at the Slovenian PROs where they are also employed. The participating PROs are: Jožef Stefan Institute, National Institute of Chemistry, Agricultural institute, faculties of the University of Ljubljana - the Medical Faculty and the Faculty of Natural Sciences and Engineering.

The evaluation commission was constituted by the following experts:

- Tjwan Tan, Liaison Officer Enterprise Europe Network, The Netherlands Innovation Management Capacity Coach, Member European Sector Group BioChemTech
- Primož Kunaver, Director, Primum d.o.o.
- Roman Kužnar, Managing Director, RC IKT d.o.o.
- Iiro Eerola, Policy Officer, European Commission, DG Research & Innovation, RTD/F/02 Valorization Policies & IPR

Criteria lots	Criteria
1. Overall	Degree to which project aligns with market need
	Project's IPR situation
2. Product/application advantage	Unique benefits
	Meets customer needs better
	Value for money
3. Market attractiveness	Market size
	Market growth
	Favorable trends
4. Competitive situation	Degree of entry barriers
	Level of competitiveness
	Manufacturing / processing synergies
5. Technology maturity	Technical gap
	Complexity
	Technical uncertainty
6. Risk versus return	Expected profitability (e.g. NPV)
	Return (e.g. IRR)
	Payback period
	Certainty of return / profit estimates
	Low cost & fast to do

Table 1: Criteria for evaluating the applications (source: Jon Wulff Petersen, TTO A/S, Denmark)

Abstracts of the Competing Teams and their Technologies

Innovative Nanofabrication Process for Catalyst Production of Better and Cheaper Hydrogen Fuel Cells »The Highway towards the Hydrogen Society«

Authors: Matija Gatalo, Matic Grom, Marjan Bele, Miran Gaberšček, Nejc Hodnik, Primož Jovanovič

PRO: National Institute of Chemistry

We have developed a new nano-technological process for production of precious-metal-based catalysts, which is simple, scalable, energy efficient, and green. With the process we also developed a new platinum-copper-on-carbon (Pt-Cu/C) catalyst for low-temperature proton exchange membrane (hydrogen) fuel cells (PEMFCs). Both innovations are protected with recently filed international patent applications (patent application pending status). PEMFCs convert hydrogen as a fuel and oxygen from the air into clean electricity, with the only by-product being water. For doing so, the catalyst in the PEMFCs plays a crucial role. Currently used catalyst is still based upon large amounts of expensive platinum and thus presents almost 50% of the total PEMFC system cost. Our new Pt-Cu/C catalyst has solved two big obstacles for widespread use of PEMFC technology: the cost of manufacturing the catalyst itself, as well the cost of manufacturing of the PEMFC system. Furthermore, industry relevant manufacturing processes for precious-metal-based catalysts are currently very scarce. Thus, our new nano-technological process itself holds immense value for possible ventures with targeted companies and thus integration at pilot and eventually industrial level. Licensing agreements on our patented technologies or selling of the IP are also not excluded. PEMFCs can be used in all forms of transportation, as well as in stationary settings. The global market size for fuel cells in 2016 has been estimated to be \$3.2 billion and exponential growth is expected in the next decade with reaching \$25 billion by 2025. Existing competition are already established companies, which are controlling a relatively closed cycle of precious metal products and recycling market (for example Tanaka Kikinzoku Kogyo and Johnson-Matthey), PEMFC core component producers (for example Johnson-Matthey, Bosch, Mebius) and companies that cover the entire supply chain from catalyst to end-user supplier (for example Toyota). The National Institute of Chemistry (NIC) is in favor of commercialization of these innovations as well as providing support to the inventors to establish a company. Discussion with potential investors are already taking place, while the catalyst itself has already been sent to some of the major players on the market under material transfer agreements (MTAs) for testing in PEMFC-relevant environments. The current team to form a new company currently consists of the main innovator Matija Gatalo ('Hacker'), an interim head of the knowledge transfer office at NIC Tomaž Bizjak ('Hustler') and a communications expert Grogga Tancek ('Hipster'). This team already received a national recognition by being awarded the 2019 Rector Award for the best innovation of the University of Ljubljana as well as Golden award for the best innovation 2019 by the Ljubljana Chamber of Commerce and Industry. Furthermore, Matija Gatalo, MSc, has also received a 'Proof of concept' grant from NIC for further improvements of the innovations.

Lightweight and Cost-effective Upper-arm Exoskeleton

Author: Miha Dežman

PRO: Jožef Stefan Institute

Whether stroke, injury or illness, early rehabilitation leads to the best cure rate of the patient. Unfortunately, the capacities of the rehabilitation center are limited and there are long queues. Exoskeleton devices are portable robotic systems that are attached to the user's limbs and can help in the work of any user. If the practitioner first shows movement to the exoskeleton and then allows the exoskeleton to continue the rehabilitation session independently, the same caregiver can concentrate on several patients and reduce waiting times. The exoskeleton can provide a consistent training program under the guidance of the physician with insightful progress monitoring and recovery rate improvement.

Current exoskeleton devices are very expensive, making them inaccessible to a wider audience. The vision of our teams is to develop a custom exoskeleton device that is lightweight and cost effective. The fully functional prototype developed can support the human upper limbs. The prototype combines lightweight construction at a fraction of the normal cost by combining classic manufacturing technology with novel 3D additive manufacturing. A modular design approach shortens the entire development time. In short, the prototype allows us to further explore high-level control algorithms where state-of-the-art equipment is lacking. It also serves as a potential rehabilitation exoskeleton.

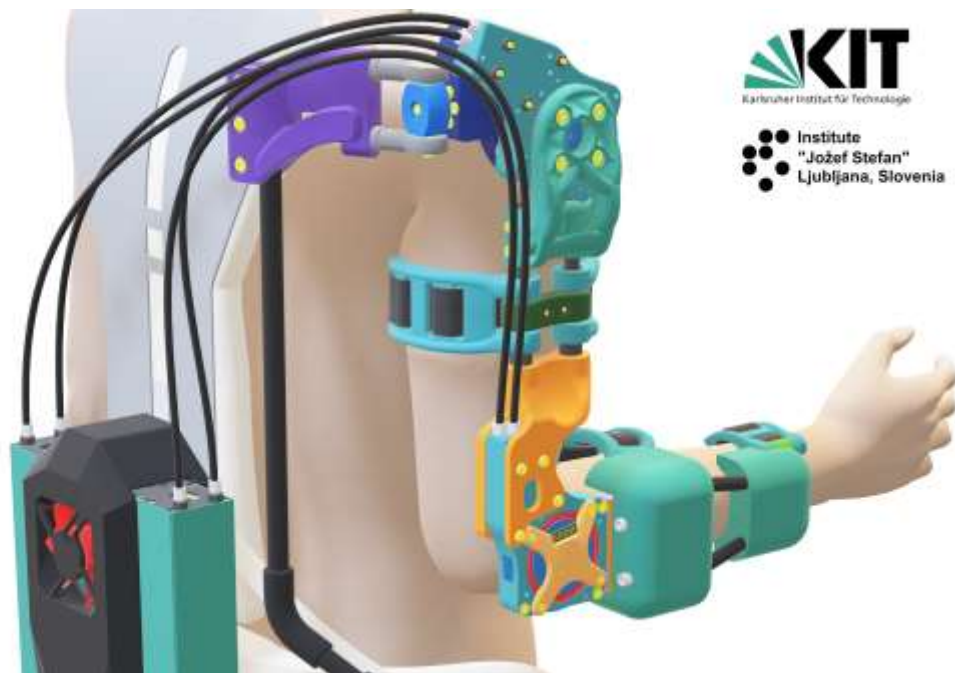


Figure 5: Arm exoskeleton in development. Author: Miha Dežman, 2019.

Non-toxic Apple Fruit Thinner

Author: Matej Stopar

PRO: Agricultural Institute of Slovenia

Chemical thinning of small fruits in commercial apple orchards is a necessary technological procedure which assures high quality fruits and constant bearing of the crowns through the years. The existing fruit thinning agents are expensive, they are hormonal-type plant growth regulators and their action is dependent on physiological and weather conditions at the time of spraying. Further, the time window of application of existing thinners is narrow and they must be sprayed too early to satisfy growers' need on secure late spraying of fruit thinning agents. Also there is no fruit thinning agent registered for use in the so-called organic fruit production. The market demand for a new fruit thinning compound, capable to thin the fruit consistently, late, and in sustainable way for the environment, is high. After eight years of research we found polysorbates as possible new fruit thinning agents for commercial apple orchards. We secured intellectual property on EU level and we were granted a European patent certificate EP 3241437 in Dec. 2018. Polysorbates were found to be active as apple fruit thinners in very late stage, up to 22 mm fruit diameter, while existing commercial thinners can be applied to fruit only up to 16 mm in size. Also, polysorbates are food additives known in human diet as "E" substances and their registration for fruit thinning in the orchard should satisfy the eco-toxicological legislation needs. Further advantage of polysorbates as new thinners is their low cost. It can be sold to apple growers for at least one third of the price of existing commercial fruit thinners. According to non-binding collaboration agreement with Slovenian SME Metrob (plant protection product distributor) we already proved thinning efficiency of polysorbates on four production trials in 2018 and 2019.



Figure 6: Apple drooping in the period of thinning. Author: Matej Stopar, May 2018.

AmnioBiotic: A Natural Shield against Bacterial Infections

Authors: Taja Železnik Ramuta, Mateja Erdani Kreft

PRO: University of Ljubljana, Faculty of Medicine

The emergence and spread of microorganisms resistant to antibiotics is an immense issue in the European Union and worldwide. Experts believe that due to antibiotic resistance there will be as many as 10 million deaths per year between years 2015 and 2050 if current trends are not reversed (ECDC Data and reports: Antimicrobial resistance and consumption, 2017). The inability to treat microbial infections with existing antibiotics, therefore, leads to numerous deaths and also enormous healthcare costs and productivity losses. Hence, there is a great need for the development of new antimicrobial agents. Amniotic membrane is the innermost part of placenta, which is discarded after birth. Due to its biological properties it is already used in the clinical, especially in regenerative medicine. However, there are no products currently on the market that allow the use of amniotic membrane as an antimicrobial agent. We, therefore, developed a protocol for preparation of amniotic membrane homogenate (commercial name: AmnioBiotic), which can be used as an antimicrobial agent. Importantly, the preparation of AmnioBiotic does not require expensive instruments, it is quick and of low cost. This is important since the global cost of R&D for a new antibiotic is estimated at 19 million dollars for preclinical R&D alone. The global antibiotic market was valued at 45.31 billion dollars in the year 2018 and is expected to reach 62.05 billion dollars by the year 2026 at a compound annual growth rate (CAGR) of 4.0% (Grand View Research, CA, 2019). Our product, which is currently under patent pending, has been tested on several different bacteria that are commercially available, and also bacteria isolated from patients. Now we're planning to test AmnioBiotic on animal models. The next step would be the production of AmnioBiotic in a good manufacturing practice (GMP)-certified laboratory, followed by clinical studies. The product has been developed by experts in the fields of cell biology and microbiology and both inventors would like to be involved in the further development of the product. Therefore, to perform next steps we are seeking a partner from the industry, that would offer the necessary infrastructure and also expertise in product marketing and sales.

Fire Eater: The Ultimate Fire Protection

Authors: Marija Čolović, Jelena Vasiljević, Ivan Jerman, Barbara Simončič, Andrej Demšar

PROs: National Institute of Chemistry, and University of Ljubljana, Faculty of natural sciences and engineering

The polyamide 6 (PA6) represents one of the most competent high-performance industrial polymer for technical textile production because of the high tensile strength, high elasticity, and excellent resistance to abrasion. The main restraint to the end use of PA6 textile products is their flammability. Tightened regulation rules limited usage of flame-retardant agents, to non-toxic and sustainable. Till now, a suitable alternative for toxic but efficient halogenated flame retardants has not been found and that is the reason why non-halogenated flame-retardant polyamide 6 fibers are still not present on the market. Innovation is related to the development of novel synthetic route for the flame-retardant functionalized polyamide 6 and production of flame-retardant polymeric fibers. The PA6 fiber flame retardancy was achieved with environmentally friendly organophosphorus flame-retardant functionalities. For this purpose, new flame-retardant compounds, effective in low concentrations, were synthesized. Our innovation solves flammability of the polyamide 6 fibers, currently the main drawback in the field of polyamide 6 material, while in the field of PA6 plastic drastically reduces the flame retardant loading needed to reach sufficient fire protection (i.e. from 30wt.% of loading to 15wt.%). Significant reduction of needed flame retardant positively influences cost of the material production. The advantageous competitiveness of our new material is chemically bonded flame-retardant functionality to the polymeric chain, which prevents flame retardant leaching. An important added value of the invention is the sustainability of a new material. Finally, as the one of the most important advantage of the invention, is production scalability and simple industrial implementation. According to the Market research report done by the Grand View Research in 2017 the global market size for Nylon (Polyamide) 6 and 66 is estimated at USD 25.66 billion and is expected to register a CAGR of 6.2% over the 2019-2025 period. The estimated growth is attributed to accelerated usage of these lightweight products in the automobile industry as different components, gradually replacing metal parts in automobiles. The growth of this market is majorly driven by the increasing demand for the application of polyamide 6 in engineering plastics, electrical industry and electronics, and several other niche applications. Furthermore, according to the Markets and Markets report, increasing the fire safety regulations and growth of the end use industries will drive the growth of the global flame retardants market, which is projected to register a CAGR of 6.4% during the 2016-2021 period to reach USD 12.81 billion by 2021. Our future research and development are oriented towards production of sustainable multifunctional FR PA6 materials. Antimicrobial activity, hydrophobicity, thermal conductivity appeared as the most prominent properties for the new material improvement. Funding for our further studies will be obtained from the EU research projects with the goal to connect international scientific community with industrial partners into a fruitful and long-lasting collaboration. Described invention is the product of fruitful collaboration of the Department for Material Chemistry, D10 at the National Institute of Chemistry, and the Department of Textiles, Graphic Arts and Design at the Faculty of Natural Science and Engineering in Ljubljana. This team has successfully collaborated for more than ten years and our work is recognized by domestic and foreign scientific organizations and industries.



Figure 7: Flame retardant polyamide 6 copolymer and melt spun textile filament. Author: Jelena Vasiljević, 2019.

Robot-Aided Reconfigurable Workcell: An SME-friendly Solution for Automation

Author: Timotej Gašpar

PRO: Jožef Stefan Institute

Nowadays it is not unusual to see robots in various large-scale manufacturing processes. However, they are not well represented in few-of-a-kind assembly processes where changes in the production parameters occur often. Coincidentally, these types of production often take place in small- and medium-sized enterprises (SMEs) where budget that can be invested in automation is limited. Our innovation offers a manufacturing robot workcell that can be quickly and autonomously adapted to meet new manufacturing demands. What makes our solution more affordable, compared to already established products, is the novel paradigm of passive reconfigurable elements. The various reconfigurable components that we developed can function without the need of high precision sensing equipment or powerful actuators – instead, we use the already present robot arm to achieve this. This design approach significantly reduces the costs of these components without a reduction in performance. Our innovation was thoroughly tested in the relevant environment with a close cooperation of SMEs in the manufacturing industry. These SMEs provided us with use-cases from their manufacturing process for us to automate with our innovative solutions in the relevant environment. These companies also expressed their interest and satisfaction with the proposed solution. The positive feedback received from the SMEs gave us a good overview on what are the needs of potential future clients. This will mostly help us in the future efforts towards finding new end-users and clients for our innovations. Our intention is to establish a partnership with a company already established in the industry as an automation integrator. With our know-how and their network of clients we believe we can integrate our solutions to multiple manufacturing processes. Due to the fact that we are a research institution we cannot perform the production of these solutions on a scale that would be economically feasible. We would therefore need some initial funds to subsidize the manufacturing of products at the partnering integrator.



Figure 8: The reconfigurable robot cell during the assembly of an automotive headlight. Author: Timotej Gašpar, 2018.

Revolutionary Solution for 3D Printing of High-grade Polymer-bonded Permanent Magnets; A New Concept for Magnet Technology

Author: Marko Soderžnik, Matic Korent

PRO: Jožef Stefan Institute

These days the automotive industry strives to develop and produce electric cars and their components, in which one of the key parts are permanent magnets. Better efficiency in comparison with magnets produced by extrusion may be given by production of specific and complex-shaped magnets. 3D printing is one of the most appropriate solution for production of such kinds of polymer-bonded magnets, however there is still no efficient 3D print technology for producing anisotropic magnets with high maximum energy product, $(BH)_{max}$. $(BH)_{max}$ is the most important magnetic property which describes the quality of a magnet. In other words, higher $(BH)_{max}$ means better properties and smaller magnet. Besides, 3D printing of polymer bonded magnets minimizes the generated wastes of magnets and reduces the overall costs, since it can produce a near-net shape magnet. In the last few years, global demand for magnets was increased for more than 5 %. Specifically, through 2019 it will rise for more than 7 % to 14.7 billion €, particularly for polymer bonded magnets; in 2015, the global polymer bonded magnet market was valued at 1.24 billion € and the projections show that they will reach 2.25 billion € by 2025. EU challenge is that Asia presents more than 90 % of world production of magnetic materials, which puts them on the first place in this branch of production. Due to the market management, Chinese government is directing the prices of raw magnetic materials and consequently the market is unstable. This is why we need to search for a microniche where we can find a proper position in the market. With the revolutionary solution for 3D printing of high-grade polymer bonded permanent magnets, we are able to prepare specifically designed high grade magnets with specific shapes of magnetization gradient. So far, our concept of this technology works perfectly and gives promising results, therefore we are optimistically looking forward to raise funds for further investment in development of the method and product. Current team consists of two members, where each member has specific tasks on the project. The anisotropic magnet was already produced and its magnetic properties were successfully tested. After the patent application is filed, we will write a proposal for a research project funded by the Slovenian Research Agency (ARRS). If the project will be accepted, we will get financial support which will enable us to further invest in time and new human resources to optimize and finalize the 3D technology for production of anisotropic magnets.

ANNOUNCEMENT OF THE WINNER

PROGRAMME

From 13:45 to 14:00

Announcement of the Winning Team and Photoshoot with the Winners and Evaluation Commission

Robert Blatnik, Center for Technology Transfer and Innovation, JSI

Evaluation commission:

- Tjwan Tan, Liaison Officer Enterprise Europe Network, The Netherlands Innovation Management Capacity Coach, Member European Sector Group BioChemTech
- Primož Kunaver, Director, Primum d.o.o.
- Roman Kužnar, Managing Director, RC IKT d.o.o.
- Iiro Eerola, Policy Officer, European Commission, DG Research & Innovation, RTD/F/02 Valorization Policies & IPR

ANNOUNCEMENT OF THE WINNER

The evaluation commission weighed all the criteria in the evaluation process and selected the winning team: **Matija Gatalo, Matic Grom, Marjan Bele, Miran Gaberšček, Nejc Hodnik and Primož Jovanovič** with their technology: **Innovative nanofabrication process for catalyst production of better and cheaper hydrogen fuel cells »The highway towards the hydrogen society«**. The team and technology originate from the National Institute of Chemistry in Ljubljana, Slovenia.

The winning team and their technology in the opinion of the experts have the following and above all cases prevailing characteristics: clear value proposition, technological maturity, entrepreneurial skills of the team with key partners found, and great benefit for society.

SESSION 3: DIGITAL INNOVATION HUBS IN SLOVENIA WELCOMING SESSION

PROGRAMME

From 14:15 to 14:30

Short Welcome from the Local Government

Marko Hren, Senior Expert of Smart Specialization Coordination Division, Government Office for Development and European Cohesion Policy

Objectives of the Workshop, Presentation of the Framework (DIHELP)

Jorge Galván Falcón, Director CIDIHUB, Canary Island Digital Innovation Hub, DIHELP project expert/coach for the JSI DIH

SESSION 3.1: STATE OF PLAY IN SLOVENIA'S DIGITALIZATION

PROGRAMME

From 14:30 to 15:30

Moderator:

Dr. Jan Jona Javoršek, Manager, Center for Network Infrastructure, JSI

Use of Drones in Agriculture to Reduce Use of Pesticides, Fertilizers and Environmental Impacts

Sergej Krajnc, company Termodron, d.o.o. (by DIH ITC Cluster)

Mr. Sergej Kranjc of Termodron has presented the use of drones in agriculture, for spraying, to reduce the consumption of pesticides, fertilizers and environmental impacts. With a mobile device you can monitor consumption in kg/ha surface, as a geographic location. He said that digital technologies are also subject to protection.

Practical Experience and Challenges of the DIH's Performance

Dr. Brane Semolič, DIH Innovation Office Coordinator, Digital Innovation Hub of Eastern Slovenia (DIGITECH SI -East)

Dr. Brane Semolič – Coordinator of the Innovation Office of the Digital Innovation Centre of Eastern Slovenia (DIGITECH SI-East), presented practical experience from their digital innovation center. DIGITECH SI - East is a regional organizer and enabler of digitalization innovation groups and community, established in 2017. It provides innovation and project office services for the needs of SMEs, and supports their efforts in the digital transformation of their organizational and inter-organizational value chain businesses. LENS Living Lab - International virtual living laboratory (<http://www.3-lab.eu/>) and TCS - Toolmakers Cluster of Slovenia (<http://toolscluster.net/en/>) are partners in the founding of DIGITECH SI-East. They are organizers of various thematic open innovation communities. For example, they established the regional Competence center ROBOFLEX to support partners in research and innovation of flexible cognitive robotic systems for the needs of manufacturing SMEs and its Industry 4.0 efforts. The solutions are developed on the basis of workshops, motivation meetings, coaching, consulting and expertise, and risk-sharing services. The DIGITECH SI-EAST is also via LENS Living Lab and TCS globally connected with 50 experts, from 40 countries, and 3 continents. Generally, they observe the lack of integration competences, integrated approaches, collaboration culture, partnering values, and trust.

Digitalization of Slovenian Farms and Food Producers, Results and Challenges for the Future

Daniel Copot, ITC Cluster, DIH Agrifood

Mr. Daniel Copot, ITC Cluster, DIH Agrifood from Murska Sobota, works with more than 100 companies from various activities to transfer technologies to agriculture. They are interested in food production, food and health, environmental and water protection, and social innovation. They believe that the problem of 50% lack of nutrition will be solved with technology over the next five years. Much of it is represented by small manufacturers, and networking is tricky. Therefore, it is necessary to explore better business models for smaller manufacturers in terms of cooperation.

The Practical Example of DIH services in a Company – MPT d.o.o.

Andrej Kozan, company MPT d.o.o. (by DIH JSI4SMEs)

Remarks by:

Marko Hren, Senior Expert of Smart Specialization Coordination Division, Government Office for Development and European Cohesion Policy

Jorge Galván Falcón, Director CIDIHUB, Canary Island Digital Innovation Hub, DIHELP project expert/coach for the JSI DIH

Mr. Jorge Galván Falcón of the Canary Islands Digital Innovation Hub, has made it necessary to cooperate, as some value added at national level, and to improve services when they identify local needs.

Mr. Marko Hren, from the European Cohesion Fund, mentioned that the partnership could also create organizational growth.

Other representatives of DIHs from Slovenia

Open Discussion and Questions

SESSION 3.2: PRESENTATION OF DIHs AND THEIR SERVICES

PROGRAMME

From 15:30 to 16:30

Moderator:

France Podobnik, Sector head, Contract and collaborative research, Center for Technology Transfer and Innovation, JSI

Digital Innovation Hubs and Digital Europe Programme

Jorge Galván Falcón, Director CIDIHUB, Canary Island Digital Innovation Hub, DIHELP project expert/coach for the JSI DIH

Mr. Jorge Galván Falcón, Canary Islands Digital Innovation Hub, has shown the mean level of use of digitalization (intensity) at the level of SMEs in Slovenia, measured among the 28 EU countries. The criteria that are in use: Internet, mobile and Internet devices, websites, social media, billing and advertising on the Internet, cloud computing, automated e-accounts, e-commerce business. The Digital Innovation Hub (DIH) consists of a group of organizations (one-stop-shop), with complementary skills, non-profit-making, offering a set of services, small and medium-sized, as start-up companies. Before deciding, pre-investment services check, develop skills, support investments, and create innovation network connectivity. They can link industrial needs and technology providers at the organizational level because they have experience in technical, technological, and non-technological areas. DIH can help businesses to change their activities at all stages of development, assess their needs in the future, help them manage new markets, and provide them with external financial support. The following consortia are involved in the initiatives: Carsa, Ecorys, Eurada, IMP³rove Academy. In digital centers, it must be appropriate to ensure that services are relevant to potential companies, including dedicated groups of employees, and that universities can also create links with stakeholders and companies.

JSI4SME DIH

Špela Stres, Head of Center for Technology Transfer and Innovation, JSI

Dr. Špela Stres, JSI, has presented that the JSI DIH provides support in well-standing as well as poor companies, identify problems, find differences and solve the technological problem of research through the examination of principles, innovations. She also mentioned if state aid resources are available, problems should be solved and that the services should be more focused on digitalization.

Digital Innovation Hub for Smart Manufacturing

Marko Močnik, Project Manager, Digital Innovation Hub for Smart Manufacturing

Mr. Močnik, Digital Innovation Hub for Smart Manufacturing, said that they are focused on the secondary, manufacturing sector. Their working areas are divided into: market, sectoral, project development, technology transfer, innovation vouchers. They develop productivity, flexibility, quality and speed of business operations. They try to download technologies, try to find solutions to eliminate losses due to waiting, failures, inflexibility, too low performance, bad transport routes, abrupt material in processes, low productivity, etc.

Facilitating Digital Transformation of Slovene's East Cohesion Region with Science in Forefront

Assist. Prof. Muhamed Turkanović, PhD, Head of DIH UM / Maja Sušec, Technology transfer professional, DIH UM

Dr. Muhamed Turkanović as head of the DIH presented the DIH UM - Digital Innovation Hub at the University of Maribor, while giving brief information about the current status of the DIH UM, its profile, activities, goals and projects. He presented the DIH UM as a DIH with the University of Maribor - the largest educational and research institution in the East Cohesion Region in its epicenter. He mentioned that their DIH is focused on facilitating digital transformation of Slovene's East Cohesion Region with science in the forefront, covering some important fields such as AI, Cybersecurity, Service Science, Data and Analytics, Blockchain, IoT, etc. He also mentions that with DIH UM they, in addition to knowledge and experience sharing, also have in mind the sharing of infrastructure between their members and other interested parties, such as the HPC (RIVR) etc. Finally, Dr. Turkanović also argued that they are already building a complete catalogue of in-house skills and knowledge, gathered through their researchers and partner companies, while also establishing the routine as an entry point for all interested parties through the existing office of technology transfer.

DIH AGRIFOOD Methodology and Services

Daniel Copot, ITC Cluster, DIH Agrifood

Mr. Daniel Copot, Industrial technology cluster-DIH Agrifood stated that they cared for digital transformation, short supply chains and gastronomy. They are looking for ways to connect also with investors and innovations. The challenge is how to find a systematic solution. Other innovation centers are included horizontally so that they can manage other innovation centers. He suggested that it would be better to focus on fewer areas, namely the more crucial ones.

Digital Innovation Hub – Styrian Technology Park

Tanja Senekovič, Senior Consultant, Styrian Technology Park, STP

Tanja Senekovič, Styrian Technology Park, has presented that their practice arises from Austria. Their key objective is to create a business environment through the support of business and the establishment of appropriate infrastructure. One's bids need to be compliant with infrastructure, business support, time, experts. They include potential entrepreneurs with ideas that are suitable for new markets, new products and have adequate resources. One employee takes care of one company because they have found that this leads to better results.

Remarks by:

Peter Wostner, Head of Smart Specialization Coordination Division, Government Office for Development and European Cohesion Policy

Peter Wostner, specialist for innovation and European cohesion policy, stated that there should be appropriate hierarchy in the national innovation ecosystem that should not just allow, but also promote specialization of individual institutions within the ecosystem thereby making each part and system as a whole much more effective. Such services should refer from deployment of technologies, to support for start-ups, incubators, fast-growing successful companies, digital transformation support, for the private sector. Users are only interested in investors' services.

Other representatives of DIHs from Slovenia

Open Discussion and Questions

SESSION 3.3: ALIGNING THE DIH SERVICES WITH THE NEEDS OF COMPANIES ON DIGITALIZATION

PROGRAMME

From 16:30 to 17:00

Moderator:

Jorge Galván Falcón, Director CIDIHUB, Canary Island Digital Innovation Hub, DIHELP project expert/coach for the JSI DIH

The session was incorporated in sessions 3.1 and 3.2

DAY 3

CONFERENCE CEREMONY

OVERVIEW

11 October 2019

JSI, Ljubljana, Slovenia

Location: Main Lecture room at the Jožef Stefan Institute (A-building) / Glavna predavalnica IJS (A-stavba)

11:30 – 11:35	Musical Performance
11:35 – 11:40	Welcome Speech: Prof. Dr. Jadran Lenarčič, Director of Jožef Stefan Institute
11:40 – 11:50	Opening Speech: Mr. Rudi Medved, Minister of Ministry of Public Administration
11:50 – 11:55	Greetings: Prof. Dr. Mojca Ciglarič, Chair of the Programme Committee of IS2019, Dean of Faculty of Computer and Information Science
11:55 – 12:25	Invited Talk: Prof. Dr. Jure Leskovec, Stanford University
12:25 – 12:40	Awards of IS2019 / 12.ITTC
	Prof. Dr. Mojca Ciglarič, IS Programme Chair
	Prof. Dr. Matjaž Gams, IS Organization Chair
	Prof. Dr. Sašo Džeroski, SLAIS President
	Dr. Mark Pleško, President of Slovenian Academy of Engineering
	Niko Schlamberger, President of Slovenian Society Informatika
	12.ITTC: Awards Ceremony – Competition for the Best Innovation with Commercial Potential in the Year 2019, 12. ITTC Programme Chair, Dr. Špela Stres, MBA, LL.M
12:40 – 12:45	Musical Performance
12:45 – 14:00	Cocktail Party

12.ITTC AWARD SPEECH

Špela Stres, Head of Center for Technology Transfer and Innovation, JSI

Spoštovani gostje, spoštovani udeleženci!

Slišali smo, kako izjemnega pomena je sodelovanje med različnimi panogami in kako raznolike so aktivnosti, za katere so bile podeljene dosedanje slavnostne nagrade.

Iskrene čestitke nagrajencem tudi z naše strani.

Znanost je osnova vsega napredka, tako na področju informacijske družbe kot na področju družbe kot take.

Zato vsako leto in letos že enajstič zapored podeljujemo nagrado za najboljšo invencijo oz. inovacijo s komercialnim potencialom iz javnih raziskovalnih organizacij.

Mednarodna komisija je presodila, da gre nagrada 12. mednarodne Konference o prenosu tehnologij za najboljšo invencijo oz. inovacijo s komercialnim potencialom iz JRO v letu 2019 v roke ekipe

**Matija Gatalo, Matic Grom, Marjan Bele,
Miran Gaberšček, Nejc Hodnik, Primož Jovanovič**

za njihovo tehnologijo:

**Innovative nanofabrication process for catalyst production of better and cheaper
hydrogen fuel cells "The highway towards the hydrogen society".**

Tehnologija izvira iz Kemijskega inštituta. Ekipa prejme denarno nagrado v višini 2.500 evrov. Predstavnika ekipe, Matija Gatala, vabim na oder.

Člani mednarodne ocenjevalne komisije so svojo odločitev utemeljili z naslednjimi poudarki:

“Predstavljena tehnologija ima jasno izraženo vrednost in je na visoki stopnji tehnološke zrelosti. Tehnologija prinaša potencialno visoko vrednost za družbo, kar je podprto z usposobljeno ekipo, ki ima ključne veščine in znanja ter vzpostavljene partnerske vezi za uspešno izpeljavo tržnih aktivnosti.”

V imenu organizacijskega odbora 12. Mednarodne konference nagrajeni ekipi čestitamo.

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Konferenca / Conference

Uredili / Edited by

**Mednarodna konferenca o prenosu tehnologij - ITTC /
International Technology Transfer Conference - ITTC**

Špela Stres, Levin Pal, France Podobnik, Duško Odić, Robert Blatnik