



KNOWLEDGE EXCHANGE & COLLABORATION

INSPIRING EXAMPLES FROM FIVE
HUNGARIAN HIGHER EDUCATION
INSTITUTIONS



This case study was prepared by Zsuzsa Jávorka, Technopolis Ltd. with input from Guia Bianchi, based on the visits to the higher education institutions as part of the Hungarian HEInnovate country review undertaken in 2016.

Introduction

Higher Education Institutions (HEIs) can act as gatekeepers to the knowledge and technology emerging from ongoing research, and have a significant role in its diffusion. To effectively disseminate such research requires enterprising individuals and ad-hoc mechanisms that enable transfer, application and exchange of knowledge and technology with the external world. When done so properly, HEIs have the capacity to enhance development, wellbeing and sustainability for a wide range of stakeholders.

Many economies in Europe face the challenge of making academic research relevant and accessible for society. Turning research results into products and services requires HEIs to be flexible and responsive to real world problems, to enable researchers and students to (jointly) develop innovative solutions, and to be capable of spreading knowledge. Indeed, these are important qualities that define the 'entrepreneurial capacity' of a higher education institution.

This case study highlights the role that reciprocal learning and the formation of knowledge networks play in the development of such 'entrepreneurial capacity' within HEIs. Instead of understanding these relationships from the narrow perspective of knowledge transfer, knowledge exchange also sheds light on the roles that external stakeholders play in shaping the research, teaching content and capacities of the HEI. To ensure value creation for society, knowledge exchange requires the active involvement of a range of stakeholders (e.g., public sector, regions, business, alumni, professional bodies) who are key contributing players in the success of entrepreneurial HEIs.

The network based approach to knowledge exchange also includes the impact upon local development and reflects the 'third mission' of an HEI, usually defined as the stimulation, direct application and exploitation of knowledge for the benefit of the social, cultural and economic development of society. Building and sustaining knowledge exchange networks serves to create value for stakeholders in different ways. While motivations for increased collaboration and knowledge exchange differ, they are prevalent.

A number of practices have emerged from the work of HEInnovate with the Hungarian higher education system. This case study provides insight into a diverse range of initiatives undertaken at five different Hungarian HEIs to spur organisational experimentation and innovation. Each initiative presented deals with particular environments, stakeholders and conditions. Some of these initiatives have been in place for some time, while others are new, emerging ideas still under formulation and experimentation. A common feature is that they all strive to enhance and support the flow of knowledge exchange, both outward and inwards of the HEI. The examples showcased in this case study - as a reflection of the HEInnovate spirit - serve as inspiration. The case study is aimed at highlighting the importance of fostering and reinforcing relationships with the key stakeholders as these relationships are a key aspect of becoming an entrepreneurial HEI.

Before describing specific examples from the five HEIs, the central role the Technology Transfer Offices (TTOs) play in fostering knowledge transfer in the institution has to be highlighted. Technology Transfer Offices are located at all universities discussed below. The individual efforts are supported by the national TTO Forum. The Forum provides the opportunity for national and international benchmarking for best practices, joint representation of interest, cooperation in TTO projects, initiation of an active knowledge exchange and consults with relevant HEI authorities and regulatory bodies (National RDI Office, Ministries, etc).

While the TTO's size, embeddedness in the individual HEIs and remit shows some slight variations, they all share a set of common tasks and features. These include helping researchers start their own businesses, supporting spin-off creation and providing assistance when submitting patents or licences, offering marketing solutions and advising on how to transfer scientific ideas into a business. The offer of the TTOs usually spans a wide variety of Intellectual Property Rights (IPR) related services from providing information and support to inventors, through to the development of an IP protection strategies with the involvement of external experts (e.g. patent attorneys), to the management of the organisation's IP portfolio. Based on researchers' needs TTOs provide a suitable solution to make the most out of their innovative potential that yields benefits for the researchers, the university and beyond. Most TTOs have capacity for virtual incubation of business ideas and can provide administrative and basic financial services as well as office space to fledgling spin-off businesses. However, these capacities are not yet sufficient and there is agreement for the need of capacity building and further development.

The HEI is committed to collaboration and knowledge exchange with industry, the public sector and society

The former Technical College of Transportation and Telecommunication became what it is now known as **Széchenyi István University (SZE)** in 2002. The University has two campuses, one in Győr and one in Mosonmagyaróvár. The list of faculties includes engineering, business, law, agriculture and food, health, sports and music and it offers training and degree programmes from vocational education to doctoral programmes. Occupying a central role in the North-Transdanubian region, Széchenyi István University shows a deep commitment to collaborating with industry, public sector and society. While it maintains a mutual dialogue with its local stakeholders, the University also enhances partnerships at national and international level. To ensure an organisation-wide commitment, knowledge exchange has been put at the core of the organisation's strategy and incorporated into its institutional policy.

The University offers unique training and research in the region, which primarily serves the engineering focused production activities, building on the traditional focus of the North-Transdanubian economy, and its social and institutional environment. The University offers market-oriented education with a specific focus on vehicle engineering, transportation and telecommunication to serve the local economy.

The University plays an initiator role in the development of the regional innovation ecosystem. In this respect, the University has **deep and diverse collaborations** with local economic players, more specifically with automotive and electronics manufacturers as well as with their suppliers (e.g. AUDI HUNGARIA Zrt., Lear Hungary, Suzuki, Ajkai Elektronika, Rába Axle Ltd). In addition, the University has put in place several mechanisms to maintain mutual contacts with national and international stakeholders, more specifically with innovation intermediaries, clusters and inventors in the region. The University is a member of the **Hungarian Association for Innovation**, founding member through the Universitas Nonprofit Ltd of the INNONET Innovation centre, located in the international industrial park of Győr and the Pannon Novum Regional Innovation Agency. Universitas is a not-for-profit organisation which facilitates the collaboration between the University and external stakeholders. Universitas has ISO certified standards, which help guarantee its effectiveness.

The University is engaged in a variety of activities with these partner organisations. For example, it has been organising an annual **Regional Innovation Exhibition** together with the Chamber of Commerce since 2009. The exhibition and its accompanying events attract several dozens of inventors, companies, start-ups and companies from the region.

The importance of the University's partnerships with key regional stakeholders is clearly highlighted through the development of its **partnership with AUDI HUNGARIA Zrt** and the City of Győr. AUDI HUNGARIA Zrt is the key partner of the University. The first collaboration agreement between the company and the university was signed in 1999. The first milestone of the fruitful collaboration was the establishment of the **Department of Internal Combustion Engines** in 2007 that was followed by the establishment of five other departments in the University. The second milestone of the collaboration between AUDI HUNGARIA Zrt and the University was establishment of the Audi Hungaria Faculty of Automotive Engineering in January 2015. The Faculty provides the institutional framework for the educational, professional and scientific collaborations between staff members of the University and the company. The following six departments are the result of the collaboration with Audi Hungaria Faculty of Automotive Engineering: Department of Internal Combustion Engines, Department of Whole Vehicle Engineering, Department of Vehicle Production, Department of Material Science and Technology, Department of Transportation and Logistics and the Department of Environment Engineering.¹

The University collaborates closely with the local government in the city of Győr. Since 2011 the city of Győr, AUDI HUNGARIA Zrt and the University have harmonised communication to carry out **several joint PR activities** fostering regional development. The slogan, "the future is being built in Győr", forms part of the communication of this trilateral partnership and shows clear commitment from the senior levels of all three partners. The **Győr Automotive Career Path Model Collaboration** is a next stage of the partnership that seeks to include several more local companies and educational organisations in the collaborative process. The Győr Automotive Career Path Model Collaboration is coordinated by the local government, and aims to support stable career paths for the people living in the city, as well as improving general quality of life.

¹ Audi Hungaria , Győr (Hungary), topped the latest Graduate Barometer 2016 survey as being the most attractive employer among engineering and IT students. The Company also achieved an outstanding third place among business students. So far, around 1,700 young people have completed vocational training at Audi Hungaria in Győr, and this model has been recognised there as dual training since 2011.

The HEI demonstrates active involvement in partnerships and relationships with a wide range of stakeholders

Szent István University (SZIU) consists of eight different faculties with a total of 15,000 students enrolled in the different study programmes. These range from vocational training to doctoral studies and are offered in a wide variety of subjects, with a broad spectrum covering natural and environmental sciences, food engineering, horticulture, landscape architecture, mechanical engineering to business economics, social sciences, architecture and health sciences.

The University has long acknowledged the need for an HEI to establish close connections with the business sphere, engaging both large and small enterprises. The contribution of industrial partners- providing practical training, mentorships, internships and input for student theses- creates significant added value for all internal stakeholders at the University. However, such collaborations and partnerships need nurturing and fostering, underpinned by both internal and external communication efforts. **Enhanced external communication** helps the University reach beyond current partnerships and establish new relations, networks and collaborations for the benefit of all involved. The University has established a large network of international partners, while focusing on the national level SZIU offers **double-degree programmes and training opportunities** for its students in collaboration with local and regional business partners.

The large number of engaged business partners show that the benefit of cooperating with the University is visible to the business world. The engagement is due to the University's conscious efforts to help and attract small and medium sized enterprises as partners who may in general find it more difficult to recruit a young and competitive workforce in line with the company's needs, unlike their multinational counterparts who have structure and resources in place to help maximise the benefits from work arrangements with HEIs. Following this reasoning, SZIU declared its intentions to put dedicated mechanisms in place to make it easier for external stakeholders to cooperate and exchange knowledge with the university.

To enhance its knowledge exchange-related activities, SZIU started to **map its knowledge base** in order to provide better access to the knowledge generated and its capabilities for internal as well as external stakeholders.² These activities are driven by the University's efforts to encourage staff and students to address the needs of external stakeholders, both on a national and international level. The University has recently started the **Knowledge Gate** initiative. It entails a multiple-step process, in which the University can send its students for work experience in local companies and to facilitate two-way knowledge exchange, it provides possibilities for the companies to give lectures at the University. SZIU recognises that the engagement of staff and students is crucial for success knowledge exchange and it constantly strives to improve its practices.

The HEI has strong links with incubators, science parks and other external initiatives

The **University of Debrecen** (UD) is large, traditional university with a strong role in regional development, and it is one of five research universities of Hungary. The institution has accredited higher level teaching programmes in 12 various scientific fields. In terms of the number of applicants and recruited students, the University is positioned among the top three Hungarian universities.³ The University offers a colourful training selection, with a strong focus on life and medical sciences, a high rate of qualified lecturers and 23 PhD schools. The high-quality education, research and development capacities put the University in an important role in the region's economic, social and cultural development.

Cross-fertilisation of knowledge between the HEI and its key stakeholders plays an important role for in developing the University's knowledge exchange focused activities. The University is a key partner in two regional clusters, and provides a wide range of possibilities for its internal and external stakeholders to foster mutual and continuous dialogue. To support such engagement the University of Debrecen provides **open spaces for collaboration and networking**, as well as **structures** and practices.

The **UD Technology Transfer Office (TTO)** plays a central role in building capacity for knowledge exchange and fostering the exploitation of pioneering research. Set up in 2005, the TTO was among the first to be established in Hungary. The TTO provides a wide-range of innovation services for the central management, researchers, students and partners of the University. The portfolio predominantly focuses on promoting the University's research capacities, managing cooperation with business partners, IP management, licensing efforts and raising the innovation awareness of the internal stakeholders of the University. The TTO has a coordinating function within the University as well as providing support to the commercial exploitation of

² <https://szeedsm.eu/position/location/>

³ <http://www.webometrics.info/en/Europe/Hungary%20>

research results. The Technology Transfer Office has strong links with the Hungarian Intellectual Property Office (HIPO) and other national organisations active in the field of innovation.

Looking at the international sphere, the UD TTO is working together with the World Intellectual Property Organization (WIPO) and is a member of two professional international technology transfer organisations (ASTP-Proton, AUTM). Through these international memberships, the UD TTO has active links to other technology transfer offices and incubators across Europe and beyond.

The Innovation Ecosystem Centre (IEC) of the University, established in 2017, is a reference point for start-up support, offering start-up creation coaching and mentoring to students and staff. It works on the development of an incubator programme to create the platform for increased collaboration and networking with external stakeholders such as the clusters around the University. The ultimate objective of the incubator programme is help the cross-fertilisation of knowledge and a multidisciplinary approach that fosters creativity and innovation for the benefit of the region and beyond.

The Centre helps link business experts within the Students Innovation Club, provides assistance to the Student Innovation Network which awards Innovation Prizes to entrepreneurial students and to the running Team Academy, aimed at fostering entrepreneurial teaching and learning. As such, its presence inside the University is crucial for the promotion of innovation and entrepreneurship, and supporting student start-up companies.

The University uses the available national and international funding sources strategically. The Centre for Higher Education and Industrial Cooperation Programme (FIEK) represents important financial contribution for the University and helps foster achieving its strategic objective, the establishment and further development of a unique health programme that brings together industry leaders and researchers through access to state-of-the-art infrastructure.

The HEI provides opportunities for staff and students to take part in innovative activities with business / the external environment

Semmelweis University is the oldest medical university in Hungary and was established in 1769. It has five faculties, including Dentistry, Health and Public Services, Health Science, Medicine and Pharmacy and a School of PhD Studies. Alongside programmes in Hungarian, it offers programmes in English, German and Italian. With 27 clinics and nearly 8,000 employees, Semmelweis University is one of Hungary's largest health care providers covering 6% of the entire population's health care needs, which translates to around 2.3 million cases per year. Clinical work is carried out in close cooperation with education and research to the benefit of all three areas. While maintaining traditions and good practices, the University tries to remain at the forefront of fostering innovation and new opportunities for its students, researchers, and business partners.

In order to maintain strong links within the triad of education, healthcare and research, the University established the **Semmelweis Innovation Centre** in July 2013. This Innovation Centre completely renewed the institutional background supporting R&D&I activities at the University and put further emphasis on the crucial role innovation plays in maintaining and reinvigorating these links. The Centre's main objective is to offer examples of existing good practise whilst establishing a solid base for innovative processes. The Innovation Centre functions as the central component facilitating the connections between each internal department and the university at large. As such, it can engage with and provide services for all members of the University. The Innovation Centre of the University also serves as a liaison between business and researchers, and helps researchers in the realisation of their ideas. The Innovation Centre also advertises entrepreneurship among its students and staff by organising showcase events and creating opportunities for stakeholder networking. The Centre has been established and is operating as a central department within the University.

The **Technology Transfer Office** (TTO) is integrated into the Innovation Centre alongside the **Grant Office**. The integrated approach facilitates strong collaboration between these functional units and delivers benefit through shared expertise and information. The additional support of the TTO is beneficial as it helps prioritise innovation and exploitation as an integral part of the research activities carried out at Semmelweis, both during implementation and the application of call for proposals.

The Innovation Centre is structured into other functional groups dedicated to commercialisation, third party funding and fundraising as well as knowledge management. Legal support is also provided within the Centre for a broad range of issues related to technology transfer: negotiations, agreements, contracts. The Centre maintains and develops effective cooperation with all relevant administrative (e.g. legal, finance, controlling, public procurement, facility maintenance, marketing, alumni) University departments and academic institutes as well as the relevant authorities and collaborating partners.

In addition of creating an integrating support system for internal stakeholders to help them link with external counterparts and engagement opportunities, the University undertakes and participates in a range of various initiatives engaging the wider society. For example, Semmelweis University has been participating in the international **Researchers' Night**⁴ events for several years. The **Researcher's Salon** is Semmelweis' elite scientific forum, where exemplary researchers can share ideas and network with young aspiring scholars.⁵ Furthermore there are **Faculty Open Days** are organised, where prospective students meet the representatives of the various units at the University, and have the opportunity to attend classes and visit clinics.

The HEI integrates research, education and industry (wider community) activities to exploit new knowledge

Eszterházy Károly University (Eszterházy Károly (EKU) provides a wide variety of educational programmes, distributed across four campuses in four different cities in Hungary. The main campus is in Eger, while the others are located in Gyöngyös (Károly Róbert Campus), in Jászberény and in Sárospatak (Comenius Campus). The EKU offers study programmes in the fields of arts, sciences and humanities, such as pedagogy as well as natural sciences. The HEI puts a major emphasis on providing state of the art knowledge to enable its students to meet the needs of the labour market successfully. Eszterházy's **research and knowledge centres** facilitate academically engaging scientific research as well as cater for the needs of the region. Linking research and education with industry and local communities is a key to foster the co-creation of knowledge. Eszterházy Károly University recognises that to achieve such a goal, it needs to put in place the right mechanisms to create such mutually beneficial relationships.

To support innovative activities of its research groups and foster the development of supportive external relations, two key organisational units were established in 2015: **The Centre for Research Development** and the **Office for Knowledge Utilisation**. The Centre for Research and Development unites the different knowledge centres and research groups at Eszterházy. The Centre itself is comprised of a number of different **research based knowledge centres**, each with their own focus.⁶ The thematic coverage of these centres spans across a large number of subjects, including food and wine, regional development, education and informatics. Each of the knowledge centres has its unique objectives and aims, engage different researchers and industry partners. These knowledge centres facilitate the co-localisation and coordination of academic research activities and interests of industry partners in direct and specific ways. Given the ties to the University these centres also serve as a conduit for students of Eszterházy to engage in professional experience.

The main priority of the Centre for Research and Development is to help implement the research development activities set out in the different units' strategies and research plans, to generate projects, to establish a wide network of nationally and internationally acknowledged professionals and to develop services in accordance with existing market needs. Another key activity of the Centre focuses on ensuring that research results are not only disseminated widely in the form of lectures, events, articles and other presentations, but they are incorporated into the education as well. Furthermore, the Centre for Research Development as a whole functions as a cross-faculty cooperation instead of a school based research group, therefore it can better facilitate connections between distal parts of the HEI's research community whilst maintaining its focus on regionally connected R&D.

The **Office for Knowledge Utilisation** works under the umbrella of the Centre for Research Development. It focuses on knowledge management and dissemination. The Office functions as the institutional partner to facilitate networking, and the utilisation of knowledge generated at the University business.

⁴ <http://semmelweis.hu/english/research/scientific-events/researchers-night/>

⁵ <http://semmelweis.hu/english/research/scientific-events/researchers-salon/>

⁶ <http://khi.uni-eszterhazy.hu/en/tti-en/research-and-development-centre>