Competence Centres of Széchenyi István University

A Competence Centre is a key competence of the University, established as a cross-disciplinary innovation research department under the dual leadership of the Rector and the Chancellor. By providing corporate partners with a state-of-the-art innovation background and contributing to the development of the University’s and entrepreneurial competitiveness, its mission is the coordination of innovation and R&D resources in the area of key competences. The role of competence centres, besides determining the scientific directions of the University, is the operation of the sustainable entrepreneurial business model in collaboration with the University's spin-off enterprises.

DESIGN COMPETENCE CENTRE

The Design Competence Centre, as the creative industry centre of Széchenyi István University, cooperates with the other competence centres of the University, its educational and research organizations, and with training programmes in design and other fields of science.

The Design Competence Centre organizes its activities with an emphasis on the mutually reinforcing requirements and values of responsibility, creativity and innovation, as well as multi-disciplinarity.

Its role as a research, industrial and non-formal training partner is project-based research and development, form and product design, strategic and process planning, basic and applied research, design, as well as social and human training, talent management and incubation.

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CENTRE FOR HIGHER EDUCATION AND INDUSTRIAL COOPERATION

The Centre for Higher Education and Industrial Cooperation was created within the framework of the project with the identification number GINOP-2.3.4-15-2016-00003, on the basis of decree 1540/2014. (IX. 24.) of the Government of Hungary.

The primary task of the centre is to make economic use of the significant R&D&I results generated by the cooperation of the participants of several disciplines. Its operational base is provided by the intellectual resources and laboratory infrastructure of the University, which - with conscious development - have become suitable for meeting the needs of the regional economy and realizing efficient knowledge and technology transfer in addition to their primary tasks in education and research. The Centre for Higher Education and Industrial Cooperation realizes a two-way technological transfer: on the one hand, development ideas originate from the external, industrial participants and the research activities respond to these industrial challenges. On the other hand, the results generated at the university are transmitted to the enterprises by the Centre.

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AGRICULTURAL AND FOOD RESEARCH CENTRE

The main aim of the Agricultural and Food Research Centre is to organize research activities related to agriculture and food industry (food science). The Centre participates in the preparation and implementation of national and international R&D&I projects. The Agricultural and Food Research Centre coordinates the operation of a range of laboratories (e.g. physical, chemical and microbiological testing of water, soil, feed and food samples) to support agri-food research and successful university-business cooperation. The
strategic goal of the Centre is to develop innovative research units that support the practically oriented education and research tasks related to the precision food supply chain.

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MANAGEMENT CAMPUS COMPETENCE CENTRE

The Management Campus of Széchenyi István University is located in a brand new, state-of-the-art building, which also functions as the premises of the Kautz Gyula Faculty of Business and Economics.

The Management Campus offers a continuously evolving portfolio of services which aim at the support of the research and innovation collaboration with industrial partners and local companies, more specifically the development of the international competitiveness and innovation capabilities of local enterprises, primarily those of small and medium-sized companies.

The main activities of the Management Campus are the following:

1. Student Innovation Projects (SIP)

The main distinguishing characteristic of the SIP projects is their interdisciplinary approach, with 4 to 5 students from different scientific fields forming a team to work over a period of 3 months on real-life industrial problems defined by partner companies and organisations with the support of mentor teachers. The initiative is well perceived by local partners, proven by the fact that there have been more than 20 projects completed in the last two years.

2. Innovation facilitation

Having adopted the FORTH innovation boosting method, our experts facilitate the development of the innovation competences and the definition of new products and services of our partner companies in the phases of idea and concept development. The FORTH method is an internationally acknowledged, structured approach to innovation development which efficiently combines the planning mindset with creativity and business realities. The four-month long procedure is an expedition that consists of five stages: Full steam ahead, Observe and learn, Raise ideas, Test ideas and Homecoming. The warranted results of the process are 3 to 5 novel, concise feasibility studies which can be utilized by the companies themselves or in cooperation with their partners, e.g. with the University.

3. Management Research

Thematically designated research conducted in the Management Campus is primarily designed to secure the theoretical and methodological foundations for the above described innovation services and training. The results are presented at conferences and published in national and international scientific journals by our University faculty members. There are four central research fields pursued by the Management Campus:

- open and user innovation research
- trend analysis and investigation of collaboration networks
- investigation of family businesses with special attention to the impact of generational change
- the role of Artificial Intelligence in the restructuring of work

4. Technology transfer and the development of student innovation

It is the Management Campus Competence Centre which is responsible for technology transfer at the university level, including the registration and commercialization of intellectual property (IP), together with
the mapping and presenting of the knowledge assets (including research infrastructure and equipment) of the university. A major project, “The development of the innovation ecosystem aiming at the utilization of the knowledge assets at Széchenyi István University” enables the Competence Centre to conduct a range of training programmes on innovation and entrepreneurship for students and faculty members alike. The Management Campus gives room for fruitful cooperation between students and mentors in the field of product development. A “Proof-of-concept” fund is being established, the primary function of which is to support the utilization of the results of university research and the creation of prototypes as well as business plans, together with the market research for starting spin-off companies.

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RESEARCH CENTRE FOR THE VEHICLE INDUSTRY

The Research Centre for the Vehicle Industry conducts research in the field of autonomous vehicle technology and electromobility in close cooperation with the staff of the Computer Science and Automation Research Institute.

Main tasks and targets of the Research Centre for the Vehicle Industry:

- To establish and operate an internationally acclaimed professional workshop and school in the main professional fields.
- To attract highly qualified researchers and nurture talent to achieve the growing number of research tasks.
- To connect to the Hungarian higher education and academic vehicle engineering research network and establish and operate a research infrastructure and critical volume of knowledge.
- To participate in international projects and actively take part in EU tenders.
- To establish strong business relations with national and international industrial partners.

ZalaZONE the Vehicle Industry Testing Track in Zalaegerszeg is another important site for the research activity of the Research Centre for the Vehicle Industry where the research and development relating to autonomous vehicles and electric driven vehicles done in Gy?r, can be tested in real professional circumstances.

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GLOBALIZATION COMPETENCE CENTRE

The purpose of establishment:

- Search for solutions to current global problems via an interdisciplinary initiative established by the faculties of Széchenyi István University with the collaboration of external institutional partners
- Establish international research consortia (for fund-raising purposes)
- Encourage international co-author publishing activity
- Improve international visibility of Széchenyi István University (lecturers / researchers)
- Make global issues comprehensible at national, regional and local level; communicating national priorities in a global context

I. World Economic Office
A. Research Focus Areas:

1. Globalization
   - international capital flows: transnational corporations (TNCs) and their foreign direct investment
   These days the vast majority of global production, investment and trade is linked to transnational corporations. Research on this topic focuses primarily on the latest trends in foreign direct investment by transnational companies (in the automotive industry). In addition to general global trends – with respect to Hungary – the research focuses on the economic and social embeddedness of transnational companies, including two themes: the forms of university-industry cooperation and the role of transnational corporations as suppliers of of Hungarian companies.
   - international trade: international regulation of trade in goods / services, World Trade Organization (WTO) negotiation rounds, regional trade agreements (recent mega-regional trade agreements: eg US-Mexico-Canada agreement (USMCA / formerly NAFTA); EU-Japan FTA) Regional Comprehensive Economic Agreement (RCEP); Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). Research on the subject examines the economic impact of recent mega-regional trade agreements. In the case of trade agreements concluded by the EU, the impact on the Hungarian economy is a priority.
   - Global Value Chains (GVCs): Transnational corporations carry out their activities globally. At the same time, there is a regional concentration of global value chains. There are three major regional focal points of the GVCs: USMCA / NAFTA, EU, ASEAN. Research on this topic examines how the global value chains have been restructured since the 2008-2009 global economic crisis, and how this has affected the Hungarian economy, into which value chains of the automotive industry are the most integrated.
   - international labour flows: migration for work purposes. Research on this topic addresses recent global trends in labour flows and the economic importance of remittances. In the case of Hungary, besides labour migration and the utilization of remittances, the issues of reduction of labour shortages are addressed.
   - the role of the nation-state in the globalizing world economy: political changes (globalist-antiglobalist gap), examination of innovative economic models, small-state perspective: what does globalization mean to Hungary? How is the structure of industry changing, who are the most important foreign trade partners and investors, and in what direction is it worth developing the economy, education and training? What is the impact of the complex processes of the global economy at the level of individual SMEs and individuals? Role of nation-state / small state in advocacy and national defense of social groups / regions not benefitting from globalization.
   - changing the role of the European Union in the global economy, regional power relations in the world economy: competing or complementary world regions, the impact of globalization on changes in the performance and economic development of certain regions (regional integrations), developing regional benchmarks and best practices on the global economic adaptation strategy of each region.

2. International Development and Aid
   - The Belt and Road Initiative (BRI): Research into the activities of the Chinese government’s global development strategy created from the integration of the Silk Road Economic Zone and the 21st Century Sea Silk Road initiatives established in 2013 with the involvement of 152 countries and international organisations, and the bank coordinating its infrastructural investments, The Asian Infrastructural Investment Bank (AIIB), and including Hungary’s role.
   - Research related to this topic includes the implementation of the United Nations Sustainable Development Goals (SDGs) announced in 2015. In addition, it focuses on the transformation of international aid over the past few decades (the emergence of new donor countries, development
banks (e.g., Asian Infrastructure Development Bank (AIIB), New Development Bank (NDB)) and forms of financing. It also examines Hungary’s role and potential in international aid in the context of the aforementioned transformation (e.g., Hungary’s role in the Asian Infrastructure Development Bank and the possibility for Hungarian companies to participate in infrastructure development).

3. Technological development

Research related to this topic examines the spread and economic/social impacts of industry 4.0 technologies, AI, FinTech and Bitcoin both globally and in Hungary.

4. New forms of production, service and consumption

Sharing economy: Impact of globalization on new models of distribution of goods and consumption, changes in peer-to-peer and B2C collaborative distribution. Non-profit collaborative initiatives. The role of urban lifestyle, demographic restructuring and collaborative distribution. The impact of post-materialist thinking and macroeconomic constraints on new forms of consumption.

5. Energy - energy security

Research on this topic addresses the global evolution of hydrocarbons and their substitution with alternative energy sources, as well as related environmental issues and infrastructure investments.

6. Agriculture - Food security

Research related to this topic focuses on trends in global agricultural production and the major global challenges facing agriculture (e.g., climate change, population growth) and the development of global agribusiness (horizontal and vertical industrial relations related to agricultural production) and the examination of all these aspects in Hungary.

7. Education

Research related to this topic is mainly concerned with the internationalization of higher education institutions (e.g., student/teacher mobility, cross-border training programmes, research projects, launching of foreign language taught academic programmes). Special attention will be paid to the position of Hungarian higher education institutions in the internationalization process and how they have benefitted and will benefit from it.

B. Regions:

1. East, Southeast and South Asia,

   especially: Japan, China, India; Small Tigers (South Korea, Singapore, Hong Kong, Taiwan) 10 ASEAN countries (Round 1: Thailand, Philippines, Malaysia, Indonesia, Singapore; Round 2: Brunei, Laos, Burma, Vietnam, Cambodia); A SEAN +3: China, Japan, South Korea; A SEAN + 6: India, Australia, New Zealand; A SEAN + 8: United States, Russia

2. Russia, Eastern Europe and Central Asia (in particular: Ukraine, Kazakhstan, Azerbaijan)

3. The European Union and South-East Europe (Balkans)

4. North America and Latin America (Highlights: United States, Mexico, Brazil)
5. West Asia and North Africa

6. Sub-Sahara (Highlights: South Africa, Nigeria)

7. Specific to BRICS countries (Brazil, Russia, India, China, South Africa) and related international development in point 2 (NDB)

II. **Connection of Globalization Competence Centre to international and national institutional goals / strategies**

**Link to the UN system:**

Through Sustainable Development Goals (SDGs)

- Goal 3: Health
- Goal 4: Education
- Goal 5: Gender equality, social status of women
- Goal 8: Economic Growth
- Goal 9: Infrastructure, industrialization
- Goal 11: Sustainable Cities and Communities
- Goal 12: Sustainable Consumption and Production
- Goal 13: Climate Change
- Goal 15: Biodiversity, Forests, Desertification
- Goal 16: Peace, justice, strong institutions
- Goal 17: Global Partnership for Sustainable Development

**Relation to the Strategic Goals of the Ministry of Innovation and Technology**

- Linking economic strategy and regulation to global economic trends
- Innovation and scientific policy
- Adult education
- Energy and climate policy
- Sustainability
- Transport policy
- Infocommunication and consumer protection
- Link to EU Development Policy (consortium partnership for 2021-27 programming period)

**Relation to the strategic objectives of the Ministry of Foreign Affairs and Trade and The Ministry for Human Capacities:**

Involvement in co-authoring activities of international PhD students studying at Széchenyi István University within the framework of the Hungarian Government supported Hungaricum Stipendium and Scholarship for Christian Youth programmes as well as visiting professors / researchers (eg Fulbright). Further objectives: to strengthen the personal and professional attachment to Hungary of foreign students and visiting professors / researchers in Hungary, potentially helping to raise awareness and understanding of Hungarian characteristics and interests among the elite of their countries, thus contributing to the development of economic relations between the sending countries and Hungary.

**External institutional relations:**
HEALTH-INNOVATION COMPETENCE CENTRE

OBJECTIVES OF ESTABLISHING THE COMPETENCE CENTRE:

- Establishing a multidisciplinary, market-based R&D and innovation base between leading higher education institutions in the field of technical automation and leading healthcare providers in innovative healthcare, in order to create cooperation opportunities between the theoretical and practical fields for long-term highly professional, competitive and economically sustainable R&D and innovation activity.
- Searching for scientific, technological and industrial innovation opportunities in the health sector, in an interdisciplinary environment, via initiatives established in cooperation with the faculties of Széchenyi István University and external institutional partners.
- Linking IT and healthcare practices in order to develop innovative, personalized healthcare and IT products - with Smart-Health solutions.
- Supporting the development of a quality and service-oriented prevention and recreation-rehabilitation health matrix system based on a partnership of local operators aimed at restoring trust in the health system and the doctor-patient relationship.
- In Győr, the establishment of cooperation between market and state operators in the field of healthcare, including sports health care, to aid the increase in their domestic and international competitiveness and marketability.
- Creating a professional environment that can be attractive to potential domestic and international scientific and economic partners in the field.
- Establishment of international research consortia (to raise funds)
- Development of international research collaboration in the field of health.

The parent institution of the Competence Centre is the University, working closely with health service operators, especially the Petz Aladár County Teaching Hospital and the Somogy County Kaposi Mór Teaching Hospital, the Győr County Municipality and the Olympic Sports Park, as well as with sports associations in the field of sports health.

The Competence Centre defines the directions of research, assigning human resources, collaborating
partners and applications. The aim of the Competence Centre is to support applied research and expand research areas in the field of healthcare, as well as to connect the university and non-university market operators and to pool their resources.

The activities of the Competence Centre are organically connected to the University’s research and education activities in health and sports, utilizing existing research results and infrastructural facilities.

As a result of its internationalization activities, the Centre supports the further strengthening of internationally recognized research in existing areas of expertise in sports medicine diagnostics-prognosis, rehabilitation, performance physiology, human biology, lifestyle, kinesiology and 3D motion analysis.

The Competence Centre contributes to the implementation of the university's entrepreneurial strategy by developing a comprehensive service portfolio (e.g. consulting, evaluation, rehabilitation and therapeutic services, professional training), and, via cooperation with the Management Campus Competence Centre, building the innovation ecosystem by establishing start-ups and spinoffs and better utilizing the results of research.