

## Audi Hungaria and SZE:

The Audi Faculty making Győr the most significant automotive, economic and cultural centre of Hungary

Győr, Hungary





# General Information

<b>Title</b>	Building Ecosystem for Innovators, Academics and Entrepreneurs	
<b>Pitch</b>	Győr: Facilitating knowledge transfer between the industry and education and research	
<b>Organisations</b>	Audi Hungaria Zrt., Széchenyi István University	
<b>Country</b>	Hungary	
<b>Author</b>	Zsuzsa Jávorka (Technopolis Group UK)	
<b>Nature of interaction</b>	<input checked="" type="checkbox"/> Collaboration in R&D <input checked="" type="checkbox"/> Commercialisation of R&D results <input checked="" type="checkbox"/> Mobility of staff <input type="checkbox"/> Academic entrepreneurship <input type="checkbox"/> Governance	<input type="checkbox"/> Lifelong learning <input checked="" type="checkbox"/> Joint curriculum design and delivery <input type="checkbox"/> Mobility of students <input type="checkbox"/> Student entrepreneurship <input checked="" type="checkbox"/> Shared resources
<b>Supporting mechanism</b>	<input type="checkbox"/> Strategic <input checked="" type="checkbox"/> Structural <input checked="" type="checkbox"/> Operational <input type="checkbox"/> Policy	
<b>Summary</b>	<p>The over decade long collaboration between Audi Hungaria Zrt. and Széchenyi István University (Győr, Hungary) resulted in a newly established Audi Faculty at the University. It provides an institutionalised framework for the educational, professional and scientific collaboration between lecturers and Audi Hungaria, set within the broader ecosystem of the city of Győr and the Western-Hungarian region. By establishing this faculty, engineering students have access to state-of-the-art technical and technological knowledge, which helps them meet industrial requirements and Have better preparedness for the world of work. The elements of cooperation between Audi Hungaria and Széchenyi István University is transferable, and provides a model for the collaboration that embraces not only academia and industry, but their broader ecosystem as well.</p>	



# Introduction & Overview

## 1. BACKGROUND

Széchenyi István University in Győr (SZE) is a primary provider of research and training for the North-Transdanubian region. Győr is the Hungarian capital for the automotive industry, and as such, the strength of the human resources and knowledge output of the University is bolstered through industry cooperation and the University's focus on vehicle engineering, transportation and telecommunication<sup>1</sup>.

Due to Győr's status in relation to the automotive industry, SZE is well positioned to carry out research and education in this topic. The training offered by the University is developed in close connection with the regional motor industry, with programmes developed and adjusted according to feedback on the needs of the local labour market. The University provides dedicated training programmes for regional SMEs and participates in infrastructure development programmes and projects in cooperation with the city and industrial partners. The Doctoral School of Regional and Economic Sciences aims to explore factors of Central-Eastern European cooperation.

There are several key factors in how SZE facilitates knowledge transfer between industry and the education and research system. These include some key research centres and strategic university-industry partnerships that contribute to creating new and maintaining as well as enhancing already existing relationships. SZE is home to the Research Centre of Vehicle Industry. There is also a Centre of Excellence in Vehicle Technology Research, which benefits from cooperation with a research institution of the Hungarian Academy of Sciences (MTA SZTAKI).

The partnership between AUDI HUNGARIA and SZE is a key strategic partnership, that has been active since 1996. The partnership is multifaceted and it allows for the cooperative development of research, curricula and courses in management, vehicle engineering and manufacturing, as well as it contributes to the provision of practical experience for the University's students. The partnership also delivers joint training programmes, generates scholarships and increases the number of German-speaking engineers.

## 2. OBJECTIVES AND MOTIVATIONS

The objectives of the collaboration are numerous and show-case how a partnership is expected to deliver benefits for all stakeholders involved:

- ▶ To provide high quality education – achieving the highest level practice-oriented vehicle engineering education in the world.
- ▶ To provide practice-oriented engineer training.
- ▶ To facilitate and grow cooperation between the research sector and the automobile industry.

- ▶ To attract highly trained engineering students to work within the region and at Audi's engine and vehicle manufacturing plant in Győr<sup>2</sup>.
- ▶ To grow and develop the labour market to meet the labour needs of the region's automotive organisations, reflecting a long-term human resources strategy.
- ▶ To develop regional SMEs and other companies, and to support entrepreneurs to create start-ups and spinouts from the university.
- ▶ To make Győr one of the most significant automotive, economic and cultural centres of both Hungary and Europe<sup>3</sup>. This includes achieving a desired quality threshold in terms of international competitiveness for both the University and the region. Audi is a benchmark in this regard.
- ▶ To support internationalisation of SZE.

### 3. STAKEHOLDERS

Founded in 1993, Audi Hungaria Zrt. is today the largest engine production plant and is one Hungary's largest exporters. Audi has invested €8.00 billion into the Győr site since its establishment. The Győr manufacturing facility is responsible for engine and automobile production, toolmaking and technical development, employs about 11.5 thousand people and produced over 2.022 million engines in 2015<sup>4</sup>. For the same year, Audi Hungaria reported a net revenue of €7.9 billion and an operating profit of €426 million<sup>5</sup>.

Széchenyi István University was awarded full university title in 2002. Its predecessor was the Technical College of Transportation and Telecommunication, a college with strong traditions and reputation in its subject fields. Nowadays, the University is located on two campuses, one in Győr and the other in Mosonmagyaróvár. The University is a comprehensive university, with nine faculties covering the subject fields of engineering, business, law, agriculture and food, health, sports and music. The University offers education from bachelor's level through Masters degrees to doctoral programmes, offered in Hungarian as well as some programmes in English or German. It has about 15 thousand enrolled students.

In addition to the two main stakeholders: Széchenyi István University in Győr and Audi Hungaria Zrt., local and regional stakeholders play an important role in the collaboration. They, such as the city of Győr, provide a supporting framework that facilitates university-business collaboration, while local businesses and regional companies have an important role to play as employers of the engineering graduates.

Collaboration between the University and its industrial partners, including Audi Hungaria, is facilitated by a dedicated structure put in place, a not for profit organisation, Universitas. Universitas provides access to the knowledge and expertise of the staff at the University through service provision toward external partners.



# Implementation

## 4. INPUTS

The partnership between Audi Hungaria and the University has long traditions, that have benefitted from commitment from not only the two partners, but more broadly the local and regional ecosystem.

- ▶ Financing for Phase 1 (2011) of the Department of Internal Combustion Engines was provided by Audi Hungaria, the city council and SZE
- ▶ Financing for Phase 2 (2012) was provided by the national Government and SZE

Audi Hungary have provided investment through the provision of direct finance, equipment and expertise. In addition to the financial contributions, both the university and Audi Hungaria have dedicated structures and functions established that support partnerships and forming and nurturing university-business relations with long-term, strategic objectives.

Recognising the importance and value delivered through partnerships, the University has ambitious plans to implement the 'Higher education and collaboration centre' Higher Education and Industry Collaboration Centres (FIEK) competitive programme in the coming years. Establishing a centre that will support entrepreneurship and provide RDI capacities and services to industrial partners, develop competitive products and services and become an innovation centre for with dedicated training programmes to SMEs and start-ups both, are among the future plans.

## 5. ACTIVITIES

The partnership between Audi Hungaria and SZE allows for the cooperative development of curricula for management, vehicle engineering and manufacturing related courses, as well as the provision of practical experience for the University's students. The collaboration helps students put their academic knowledge into practice in a real industrial environment.

The Audi Hungaria Faculty of Automotive Engineering covers a number of subjects, including:

- ▶ Combustion engines (efficiency, tribology)
- ▶ Alternative vehicle drive systems
- ▶ Whole vehicle flow and thermal optimization
- ▶ New materials and their processing (nanomaterials, graphene etc.)
- ▶ Production process optimization
- ▶ Logistic and packaging
- ▶ Environmental analysis

The collaboration also supports industry-relevant scientific research work, and both Bachelors and Masters courses in the Automotive Engineering field. The partnership includes contract research between SZE and Audi Hungaria and their laboratories. There is a specific focus on the development of the education of German-speaking engineers through a German-language Masters course. Audi Hungaria experts participate directly in both education and research work. Audi Hungaria also supports 4-5 PhD students annually, from among the University student body and/or their own employees who wish to pursue PhD studies.

In addition to its German-language Masters courses, SZE supports linguistic development through courses for faculty members. The SZE Department of Languages provides free of charge courses for staff in the engineering faculty.

Academic staff also have the possibility to undertake temporary placements at the company. Both students and staff can go to Audi Hungaria's automotive factories to study new technologies, make contacts and undertake knowledge exchange activities.

A dual study programme was introduced in the vehicle engineering BSc full-time degree programme in September 2015. There were five students admitted to the first academic year. It is an important element of the dual study programme, that student have employment contracts with Audi Hungaria and they are entitled for remuneration of their work during their studies. Audi Hungaria is also responsible for organisational and management tasks-related to the dual training.

The partnership between Audi Hungaria and SZE also provides joint training programmes, run by the University and Audi Hungaria in-house training departments. The training programmes engage students on academic aspects and in practical projects<sup>6</sup>. As students are involved in actual Audi Hungaria projects, they are paid for the work they do. Other examples include the promotion of student projects, workshop days for students and scholarship grants.

## 6. OUTPUTS

Key milestones of the partnership between Audi Hungaria and SZE include:

- ▶ The establishment of the Department for Internal Combustion Engines in 2007
- ▶ The establishment of the Audi Hungaria Faculty for Automotive Engineering in 2015

The Audi Hungaria Automotive Faculty was established at SZE in 2015. The faculty provides a direct link between the University and Audi Hungaria Zrt. <sup>7</sup>, and includes six departments: The Department of Internal Combustion Engines, the Department of Whole Vehicle Engineering, the Department of Vehicle Manufacturing, the Department of Materials Science and Technology, the Department of Logistics and Transportation, and the Department of Environmental Engineering. The Faculty and several of its departments are managed by employees of Audi

Hungaria, which ensures practice-oriented education and the communication of the needs of industry to senior management of the University.

At Spring 2015, almost 550 students were studying undergraduate courses in Automotive Engineering subjects (Bachelor level), and more than 150 students were studying a Masters course in Automotive Engineering subjects.

The number of students studying German language Masters courses in Automotive Engineering subjects has outperformed SZE's annual targets since 2010. As of Spring 2015, 36 students were studying German language Masters courses in Automotive Engineering subjects. The target for 2015 was 24.

## 7. IMPACTS

An important impact of the collaboration, that the benefits reach beyond the individual partners and activities and result in further continued collaboration. An example of these continued efforts is manifested in the harmonised communication activities of Audi Hungaria, the University as well as the city of Győr. All the partners share the goal of fostering regional competitiveness and economy, which is reflected in the slogan, “the future is being built in Győr”.

Brain-drain and skills shortage is a common problem in many areas in Europe, and the collaborative efforts of the partners contributed to many individuals that finish joint SZE-Audi Hungaria training and well as University studies remain in the region.

These efforts are further supported by the trilateral initiative of the Győr Automotive Career Path Model Collaboration, which is coordinated by the local government. The model is aimed at supporting a foreseeable career path and increasing quality of life for the people live in the city and the agglomeration in all aspects of life, from education through employment and establishment of families.





# Support & Influencing factors

## 8. SUPPORTING MECHANISMS

This case provides an example, where a broad range of UBC supporting mechanisms are in play to mutually reinforce the relationship between the different partners. These include:

At the level of policy, economic and financial mechanisms, such as the joint activities with the city of Gyor as well as the national funding programmes supporting further university-business collaboration and knowledge exchanges (e.g. FIEK)

At strategic level the implementation of strategic mechanisms, which are supported by structural mechanisms put in place. Examples include the Universitas non-profit organisation, the University's former Knowledge Management Centre, nominated individuals being in charge for liaison function with the partners as well as the Audi Hungaria Faculty itself.

Lastly, a broad range of operational mechanisms are in place as well, which embrace joint communication activities as well as trainings, seminars and various events.

## 9. BARRIERS AND DRIVERS

The barriers and drivers of the strategic partnerships have changed over time and with the development stages achieved.

Audi Hungaria has been putting more and more emphases on the research and development activities in its operation in Hungary. Currently the company has about 11.5 thousand staff, out of which 3/4th are physical workers, 1,200 office staff and about 1,500 are engineers from among only 1/5th are engaged in R&D. However, the Hungarian operation was extended in 2013 with a new factory, that enables Audi Hungaria to open new research activities and technical development. Therefore, in addition to already well established and increasingly growing array of education focused activities, new areas for further collaboration opened up to pursue new infrastructural developments, R&D projects and potentially collaborative research activities. These developments require a proactive response from the University.

For the University, having access to the expertise, facilities as well as support from Audi Hungaria is key and the relationships' importance is self-explanatory. However, working with such an influencing partner needs a careful balancing with the needs and requirements of other regional and national stakeholders and partners, who are important employers of the graduates and represent research partners for the University.

## 10. FUTURE CHALLENGES

The cooperation between Audi Hungaria and the University is focusing on multiple areas of education and research, knowledge exchange, and it represents a good practice of university-

business strategic partnerships. The main driver of collaboration from Audi Hungaria was to gain access to highly skilled trained graduates as future work force. The scale and scope of the collaborative activities have increased over time, but there is still room for enhancement, especially considering the research-related aspects of the collaboration.

As many of the multinational company, the research and development activities of Audi are carried out at their headquarters in Germany. This leaves only small room for the University to engage in the company's research activities. There are however new upcoming research fields and areas, niche subject fields, where the university could play an important role, if applied a more proactive and forward looking attitude. Focusing on forward looking topics and research areas requires the University to develop its capacities and ensure access to the required facilities and infrastructure.

## **11. CONTEXT**

SZE is a key participant in the local ecosystem, and has wide and well-embedded partnerships with local economic actors and organisations. These relationships have various dimensions, with the most important collaborations being in the R&D projects that based on the exploitation of the knowledge base of the University. Another important dimension of collaborations is the participation of local companies in the 'Győr Automotive District', within different university courses.

Because of its position and specialisms, SZE is integrated in a unique way, particularly via deep and diverse collaborations with local economic players, more specifically with automotive and electronics manufacturers as well as with their suppliers, such as Audi Hungaria, Nemak, Lear Hungary, Suzuki, Ajkai Elektronika, Rába Axle Ltd.

## **12. KEY SUCCESS FACTORS**

There are a number of key success factors to consider in developing and delivering the above approaches. Some of these factors are structural, and others organisational. All require a level of recognition of opportunities and challenges, and firm commitment from collaboration partners to investment and long-term working.

The commitment from the local, regional government is a major factor in fostering university-business relationships. A major driver is the desire to increase the growth of the regional economy. To ensure that the region can maintain its competitiveness and attract relevant highly trained staff, the 'Győr Automotive Career Path Model Collaboration' was developed. The idea is coordinated by the regional government of Győr, who aim to create a career path that is linked with increased quality of life for the people, who live in the city and in its agglomeration. The model is aimed to cover aspects from education through employment and establishment of families. The initiative is supported by SZE, Audi Hungaria, other local companies and educational organisations as well as regional government.



# Further Information

## 13. SUSTAINABILITY MEASURES

The development of concrete and formalised structures from the collaboration between SZE and Audi Hungaria, such as the Department of Internal Combustion Engines in 2007 the Audi Hungaria Automotive Faculty in 2015, provide continuity and the important institutional framework for educational, professional and scientific collaborations between staff members of SZE and Audi Hungaria.

## 14. TRANSFERABILITY

The model itself, strategic partnership between a subsidiary of a large multinational company and a local university is not unique. There are other examples within Hungary, which resulted in similarly strong engagement between a University and its partners. There are many enabling and success factors – as described above - that can foster the establishment of such collaboration, if combined with a lot of invested effort and supporting framework conditions, that extend beyond the partners. The scale and scope of the relationship between Audi Hungaria and the University grew over time, which is a lesson for the transferability of the approach.

## 15. PUBLICATIONS AND ARTICLES

Impact of Audi Hungaria on the local economy, Dr. János Rechnitzer (rechnj@sze.hu), Katalin Czakó, Tamás Tóth, Széchenyi István University, Győr, Hungary

Veronika Poreisz et al: Interaction Between University and Vehicle Factory in the Field of Quality Industry



## 16. LINKS

Széchenyi István University [http://uni.sze.hu/en\\_GB/about-the-university](http://uni.sze.hu/en_GB/about-the-university)

Audi Hungaria News [https://audi.hu/en/news/news/details/405 Audi Hungaria starts fifth department at Szechenyi Istvan University/](https://audi.hu/en/news/news/details/405_Audi_Hungaria_starts_fifth_department_at_Szechenyi_Istvan_University/)

Audi Hungaria News Dual Training [https://audi.hu/en/news/news/details/484 theory and practice hand in hand a new dual training program in /](https://audi.hu/en/news/news/details/484_theory_and_practice_hand_in_hand_a_new_dual_training_program_in_/)

Audi Hungaria News Building of the faculty [https://audi.hu/en/news/news/details/282 the new building of the faculty of internal combustion engines a/](https://audi.hu/en/news/news/details/282_the_new_building_of_the_faculty_of_internal_combustion_engines_a/)

Audi Hungaria News new building of SZE <http://autopro.hu/en/news/New-building-of-SZE-Gyor-s-AUDI-Hungaria-Department-for-Internal-Combustion-Engines-handed-over/3737/>

## 17. CONTACT PERSONS



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## 18. REFERENCES

<sup>1</sup> [http://uni.sze.hu/en\\_GB/about-the-university](http://uni.sze.hu/en_GB/about-the-university)

<sup>2</sup> [https://audi.hu/en/news/news/details/282\\_the\\_new\\_building\\_of\\_the\\_faculty\\_of\\_internal\\_combustion\\_engines\\_a/](https://audi.hu/en/news/news/details/282_the_new_building_of_the_faculty_of_internal_combustion_engines_a/)

<sup>3</sup> <http://autopro.hu/en/news/New-building-of-SZE-Gyor-s-AUDI-Hungaria-Department-for-Internal-Combustion-Engines-handed-over/3737/>

<sup>4</sup> <http://www.audi.com/corporate/en/company/production-sites/audi-production-worldwide/gyor.html>

<sup>5</sup> [http://bbj.hu/business/audi-hungaria-revenues-up-12-to-huf-26-trillion-in-2015\\_116325](http://bbj.hu/business/audi-hungaria-revenues-up-12-to-huf-26-trillion-in-2015_116325)

<sup>6</sup> [https://audi.hu/en/news/news/details/484\\_theory\\_and\\_practice\\_hand\\_in\\_hand\\_a\\_new\\_dual\\_training\\_program\\_in\\_/](https://audi.hu/en/news/news/details/484_theory_and_practice_hand_in_hand_a_new_dual_training_program_in_/)

<sup>7</sup> [https://audi.hu/en/news/news/details/405\\_Audi\\_Hungaria\\_starts\\_fifth\\_department\\_at\\_Szechenyi\\_Istvan\\_University/](https://audi.hu/en/news/news/details/405_Audi_Hungaria_starts_fifth_department_at_Szechenyi_Istvan_University/)