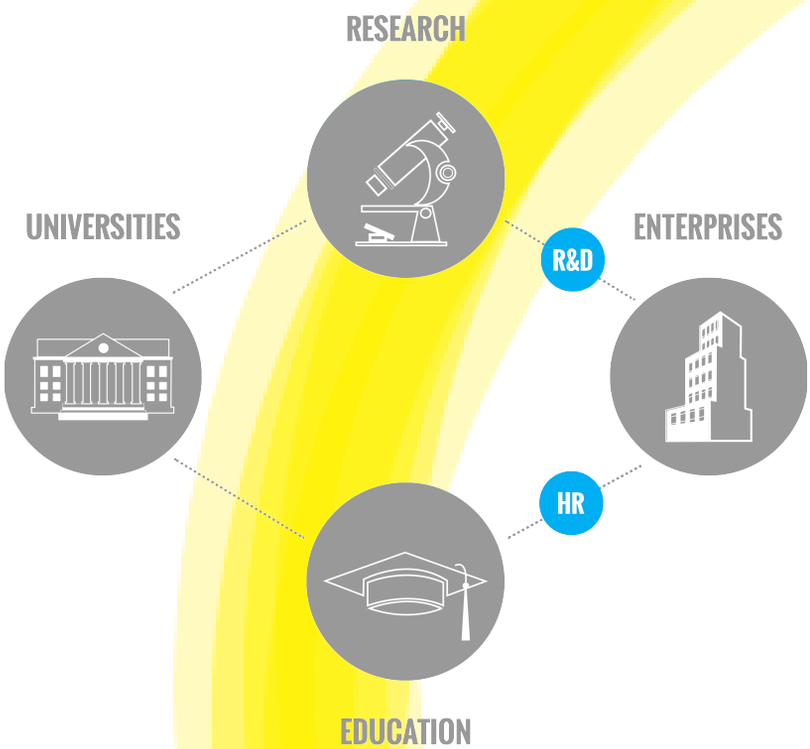
OCTOBER 2017

# edubiz

DEVELOPING SKILLS, CREATING FUTURE

# Talents & Capacities
## in Central and Eastern Europe




PROGRAM OF EDUBIZ AT AUTOMOTIVE HUNGARY 2017

V4 - THE NEW GLOBAL HUB FOR AUTOMOTIVE PRODUCTION

MINISTER OF HIGHER EDUCATION LÁSZLÓ PALKOVICS: "WE HAVE ALL SKILLS IN THE COUNTRY"

# EDUCATION MEETS BUSINESS AT **AUTOMOTIVE HUNGARY**

„Education meets Business" – the idea of edubiz 2017 is to bring together the education sector and internationally active enterprises of the automotive sector (particularly of Central and Eastern Europe) and to encourage the dialogue between them. The open conference and exhibition format of edubiz is a joint initiative of CEEPUS and local global and takes place at the Fair "Automotive Hungary" in Budapest from the 18th to the 20th October 2017.

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The Central European Exchange Program for University Studies (CEEPUS) is an international exchange program involving universities that offer joint-degree programs, especially joint-doctoral programs among member countries in Central and Eastern Europe and the Balkan Peninsula. CEEPUS covers mobility grants for students and teachers in this framework. The seven founding members of CEEPUS are Austria, Bulgaria, Croatia, Hungary, Poland, the Slovak Republic and Slovenia. Other members are Albania, Bosnia- Herzegovina, the Czech Republic, Macedonia, Moldova, Montenegro, Romania and Serbia.

The multilingual and globally connected team of local global provides media products, conferences and related marketing services. The customers are businesses, associations, trade and investment promotion agencies and the exhibition industry. With wide networks in Germany and Europe and long-term partnerships with major players in the foreign trade area they also run their own trade initiatives and projects.

The Automotive Hungary is an exhibition at HUNGEXPO Budapest Fair Center. Major business forums are held simultaneously by the exhibitors, in which major global brands such as Daimler, AUDI and Bosch are involved.

# "WE HAVE ALL THE SKILLS HERE IN OUR COUNTRY"

**Prof. László Palkovics, Minister of State for Higher Education, about Hungary's positioning as a "hub for innovation" of the automotive industry .**

Over the years, we witnessed how the multinational companies went to China, how they returned and said that they could optimize the whole supply chain much better in Central and Eastern Europe rather than in China, thus expanding production here. The result of this development: The V4 countries have today a well-functioning multinational, but not a local car industry. The national suppliers here in the V4 countries are small and medium-sized enterprises, which have a strong focus on multinational companies as customers. The prices are ok, the quality is also very good, and the logistics work without problems. But the local companies produce for their customers largely without their own intellectual properties. Not having your very own products, this makes one dependent. A stronger entrepreneurial mindset - that should be the next step in my opinion.

What is very positive, though, is that since the mid 90ies more and more companies started R&D activities in Hungary. I was lucky and could participate in this research and development process not only for my own employer at the time Knorr-Bremse, but also as a professor at the University. This was a really exciting time when Knorr-Bremse and others like ThyssenKrupp, Bosch, Continental and Audi began to build up a high-quality development in Hungary. The goal was not to remain the extended workbench, but to build the same high-quality activities as in Stuttgart or Munich. In this way, we are developing a new position in the manufacturing of the global automotive industry, from OEMs to different levels. Hungary wants to be an innovation hub for the automotive industry. For this, we have all the skills in the country.

We are not at all behind in this development, but rather at the forefront. From 1994, Knorr Bremse decided to extend their development department to Hungary. Today, the company employs over 500 engineers in Hungary. At Thyssen-Krupp, almost 1,000 engineers are working on electronic systems and autonomous vehicles. This is a strong

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development here. If a large Swabian manufacturer has to decide whether to start a project for the autonomous vehicles in Palo Alto or in Stuttgart or in Budapest, they have all good reasons to choose Budapest.

> "If a large German manufacturer has to decide where to start a project for autonomous vehicles, they have all good reasons to choose Budapest."

We have introduced our expertise in automated vehicles also in projects in San Diego, California. Obviously, we should not stop here, given our results so far, but we must develop further. That is why we have started research projects and training programs for autonomous driving in form of Master studies and in English language.

I am certain that the car world will look a lot different than it does today within the next 10 years. The vehicle itself is likely to become less important than the whole organization, the network of vehicles. How we use our cars will be the central question. I think that in this area, smaller companies are much faster and have better chances than the big ones. Horvath & Partner have reported to me how they make data-based evaluations for a large car manufacturer in Germany. There are new business models, which can be taken over much better by small companies.

> "The vehicle itself is likely to become less important than the whole organization, the network of vehicles."

Since 2014, we also have the dual universities and we are cooperating with Baden-Württemberg. Daimler, for example, brought this culture to Kecskemet, where we initiated the first pilot project and which is now being extended to the country. We already have more than 1,000 students in dual training after two years, over 600 companies are engaged there, and all this works very well. The companies have to do a lot here, of course, but they do it. In Szombathely, there is also a very strong automobile industry with Opel, LuK and others. Three years ago, we started there a new course for mechanical engineers. This works excellently when the companies, the local society, the government and the universities cooperate.


local global

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# V4 COUNTRIES - THE NEW GLOBAL AUTOMOTIVE HUB

**In the last decade, the four Visegrad countries Czech Republic, Slovakia, Poland and Hungary became a center of car manufacturing in Europe.**

Mainly thanks to the availability of a relatively cheap workforce, the stable political situation after entering European Union, being part of EU free market, having solid infrastructure and its proximity to the western European market. In all V4 countries industry has a traditionally strong role and position. The output of the automotive industry is crucial for the economic condition of the region and makes up an important share of exports for the region. Therefore trends in the automotive industry will have a significant socio-economic impact. In the year 2015 according to OICA - The International Organization of Motor Vehicle Manufacturers statistics, 68 539 516 cars were manufactured globally. In the European Union alone it was 18 515 293 cars, which is around a 27 % share of global markets. In the V4 countries together 3 324 657 cars were produced, which is a 4,9 % share of global production and 18 % of EU production.

### Automotive industry and employment

According to the ACEA pocket guide there were around 12 million jobs in 2012 connected to the automotive industry in the European Union. It is important to realize that this is not only car assembly - The automotive industry consists of direct manufacturing,indirect manufacturing (which means supplier companies which supply for example specific parts, tires etc.), automobile use connected jobs such as car sales, car repairs etc., transport connected jobs, and construction jobs. The most important are direct and indirect manufacturing jobs. In 2012 there were 2,3 million direct manufacturing jobs in the EU and 0,8 million in indirect manufacturing. In the V4 there are 443 200 jobs in car manufacturing. As we can see in comparison with data from production there is not an inevitable correlation between production numbers and the numbers of jobs.

## WORLD CAR PRODUCTION 2016

| WORLD PRODUCTION | 94.976.569 |
|---|---|
| CHINA | 28.118.794 |
| USA | 12.198.131 |
| GERMANY | 6.062.562 |
| MEXICO | 3.597.462 |
| V4 | 3.543.823 |
| SPAIN | 2.885.922 |
| BRASIL | 2.156.356 |
| FRANCE | 2.082.000 |
| TURKEY | 1.485.927 |
| CZECH REPUBLIC | 1.349.986 |
| SLOVAKIA | 1.040.000 |
| POLAND | 681.837 |
| HUNGARY | 472.000 |
| ROMANIA | 359.306 |
| SLOVENIA | 133.702 |
| SERBIA | 80.320 |

In 2014, out of all the V4 region, Hungary had the lowest hourly wages at around 8 euros per hour. In Poland wages were above 9 euros, and in the Czech Republic and Slovakia above 10 euros.9 In 2013 there were around seven hundred enterprises in

**Audi Hungaria Motor (VW)**
**Location**: Győr

**Foundation**: 1993
**Products**: TT Coupe/Roadster, A3 Sedan/Cabriolet
**Car production**: 122,900
**Engine production**: 2,000,000
**Number of employees**: 11.631

**Magyar Suzuki (Suzuki Motors)**
**Location:** Esztergom

**Foundation**: 1991
**Products**: Swift, Splash, SX4 S-Cross, Vitara
**Engine production**: 211,266
**Number of employees**: 3,100

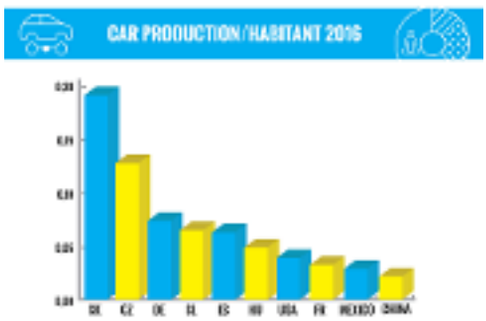

**General Motors Powertrain (GM)**
**Location:** Szentgotthárd

**Foundation**: 1991
**Products**: engines, cylinder heads, gearboxes
**Engine production**: 630,000
**Number of employees**: 2,400

**Mercedes-Benz Manufacturing (Daimler)**
**Location:** Kecskemét

**Foundation**: 2008
**Products**: B Class, CLA, CLA SB
**Car production**: 190,000
**Number of employees**: 3,555

the automotive industry which jointly employed 115 717 people. From that number, around 14 000 jobs were created by big manufacturing companies - (Audi, Suzuki, Mercedes and Opel). From TIER suppliers most the important employers are BOSCH, Denso, Knorr-Bremse, Hankook Tire,and Continental. From an investor's point of view Hungary has very competitive labor prices,but low mobility of workforce within the country.




### The automotive industry - growth driver of V4 countries

The automotive industry in all V4 countries is massively export oriented - more than 90% of production is meant for non domestic markets. In all V4 countries the automotive industry has played a key role since the 1990's in economic development and is essential for economic growth. In the Czech Republic in 2015 the automotive industry had a 24,7% share of industrial production, 7,4% share of GDP and 23,4 % share of total export. In Slovakia the automotive industry had a 44% share of industrial production, 12% share of GDP and 40% of total export. The automotive industry in Slovakia generated 26 billion EUR worth of export. The automotive industry in Poland had 9,7% share of industrial production and in 2014 it had 15,5 % share of total export which amounted for 25,3 billion EUR. In 2013 the Hungarian automotive industry produced 17,8 billion in value, which is almost 20% of the entire industrial output. Its share of total export is 18 %, and the automotive industry has a 10 % share of the Hungarian GDP.

**GERMAN OEM INTERNATIONAL PRODUCTION 2016**

| | 2016 | JAN MAI 2017 |
|---|---|---|
| CHINA | 4.551.239 | 1.873.343 |
| V4 COMBINED | 1.689.610 | 766.609 |
| CZ | 761.187 | 378.948 |
| ES | 635.337 | 378.302 |
| USA | 853.691 | 363.134 |
| MEXICO | 425.431 | 244.422 |
| BRASIL | 324.128 | 184.216 |
| PL | 297.168 | 134.749 |
| SK | 318.157 | 126.976 |
| HU | 312.998 | 125.896 |
| SOUTH AFRICA | 302.795 | 112.398 |
| TOTAL | 10.888.861 | 4.442.626 |

(Sources: **Text: www.ceeweb.org, Sources:** OICA, MAGE, VDA)

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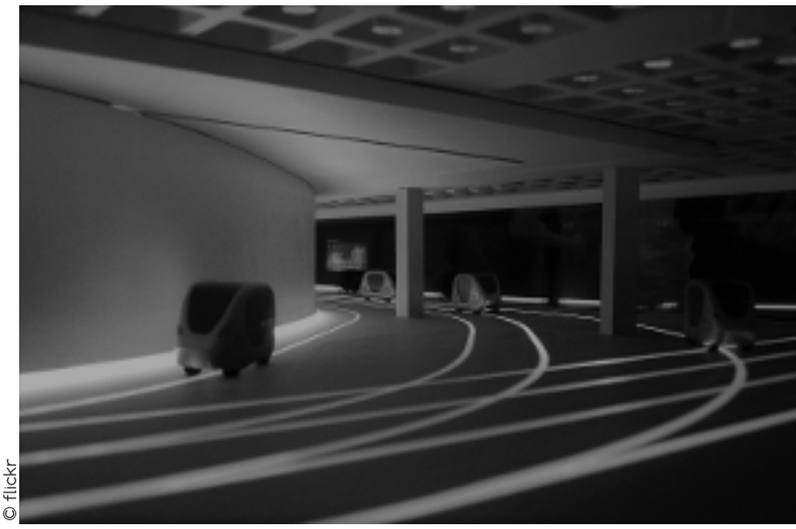
# CEEPUS ESSAY CHALLENGE: THE FUTURE OF MOBILITY

**The world is working and reflecting on solutions for autonomous driving, e-cars, artificial intelligence, digital linking of vehicles, pedestrians and drones. What ideas do students and graduates from the CEE region have about traffic in the future? We invited them to share their recommendations through an essay challenge launched by CEEPUS. We were happy to read some interesting essays and to publish the best excerpts today.**

## "Safety by software"

"The biggest safety equipment in future cars will be the software. The software will consist out of two parts. The first part of the software will handle the sensors of the car and avoid collisions while the second part of the software will be connected to a server to transfer data. These transferred data will be necessary to verify the driving decisions of the first software part and validate the sensor data to check whether they work properly. The second part of this software will actually navigate the car. With this technology traffic jams could be avoided. With the data from the sensors a computer could create a 3D simulation of nearly every road to check the condition of the roadway."

– Philipp Gradl, Student of Industrial Energy Technology, Montanuniversität Leoben (Austria)



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## "Sensor networks for cars"

"Since I believe that cars will all use electric energy to work, my vision about the traffic is that roads will be designed with a sensor network on it, that can stop any possible car accident before the cars collide.
The mechanism that I imagine this network will be based on is that it will contain a sensor that can measure the distance between two cars and the possibility that they could collide, then send a signal to the car to stop at the right time before they crush each other, then give another signal to the cars that will allow them to move again one after another. This way we can reduce car accidents that happen because of a lack of the driver's attention. These sensors could be on the surface of the roads, similar to the cat eyes but flat on the road and not popping up like it."

– Kamayel Al-Oweimer, Dental Medical Student

## "Eco-friendly methods of transport"

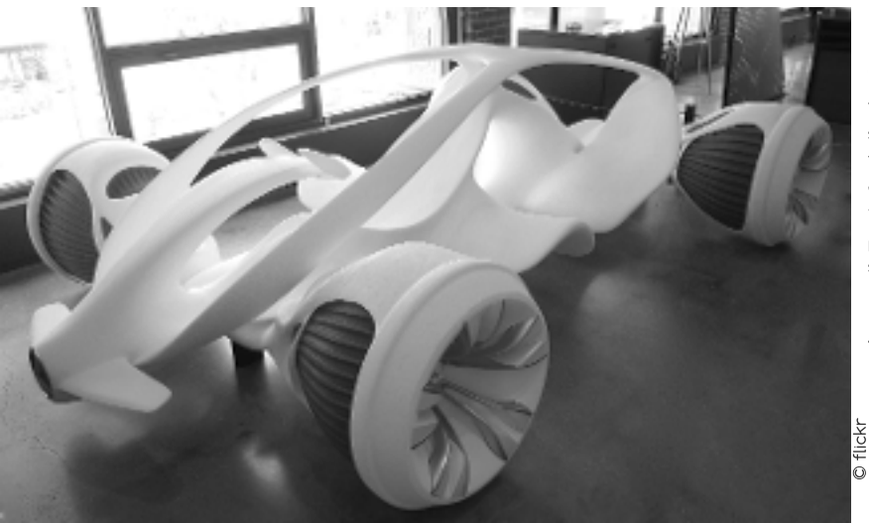
"A new traffic concept of the 22nd century would use the advantages of the existing one and minimise its flaws. This means that the new goal of traffic vehicles would be having more eco-friendly methods of transport, easier to maintain and cheaper to afford for wider population. Wind power, solar energy, electricity, even recycling materials used as fuels mixed with robotics and information technology could shape a useful outline."

– Ivana Krsmanovic, PhD in English language and literature, Technical College Cacak (Serbia)

## "The use of private cars will decline"

"Most countries of the world will improve their public transportation system within the next 20 years. When the public transportation system becomes very good, available and easily accessible, the rate at which people use their private cars will drop. This will culminate in few cars and lighter traffic on the roads. The trend over the years shows that the prices of petrol and diesel will continue to rise. Also, the growth of inflation can only be controlled and not stopped. Therefore, the purchasing power of the people will continue on the decline. With these economic factors and better public transportation system, the demand for private cars; particularly by the middle and low class people will drastically decrease."

– Abdulrasheed Rabana, Student of Communication Network, Technikum Wien (Austria)



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## "Traffic is Noah' s Ark"

"I think that traffic will be aimed to be like "Noah's Ark" where technological design is technologically integrated in order to set up a ship in flight, to land in the calm waters of the seas, to navigate inside the oceans when there is a wave of storm, as well as to move on flat ground space and underground when needed. So do great hybrid vehicles, similar to propulsion aircraft, ferries, with hermetically sealed submarines by water penetration and ground handling."

– Bujar Kapllani, Lecturer of Teaching of Visual Arts, Aleksandër Xhuvani University (Albania)

# LET' S BUILD A NETWORK: **MOBILITY SOLUTIONS**

In the 22 years since its formation, CEEPUS – the Central European Exchange Programme for University Studies – has intensified the cooperations between the universities in Middle, Eastern and South Eastern Europe sustainably. A survey launched by the Central CEEPUS office revealed that there are more than 50 universities or faculties interested in building a new network to the topic "New Traffic Solutions" which is thought to be a cooperative network for universities, experts and companies.

ALBANIA
**University "Aleksander Xhuvani" Elbasan**
Faculty of Teaching and Social Sciences

AUSTRIA
**University of Vienna**
Catholic Theological Faculty,
Department for Moral Theology

BOSNIA AND HERZEGOVINA
**University of Banja Luka**
Faculty of Economics

**University of Zenica**
Faculty of Mechanical Engineering

BULGARIA
**Paisii Hilendarski Plovdiv University**
Department of English and American Studies

**University of Architecture, Civil Engineering and Geodesy**
Department of Hydraulic Engineering

CZECH REPUBLIC
**Czech University of Life Sciences Prague**
Faculty of Agrobiology, Food and Natural Resouces

**Institute of Technology and Business in Ceske Budejovice**
Department of Transport and Logistics

**Tomas Bata University in Zlín**
Faculty of Logistics and Crisis Management

CROATIA
**J.J.Strossmayer University in Osijek**
Mechanical Engineering Faculty in Slavonski Brod

**Polytechnic of Šibenik**

**University of Rijeka**
Faculty of Maritime Studies
Academy of Applied Arts

HUNGARIA
**University of Szeged**
Institute of Informatics
Faculty of Engineering

**Eötvös Loránd University**
Faculty of Informatics, Department of Programming Languages and Com-pilers

**Budapest University of Technology and Economics**
Department of Telecommunications, Department of Transport Technolgy and Transport Economics

KOSOVO
**UBT - Business and Technology College**

**University of Prishtina Hasan Prishtina**
FCEA - Department of Architecture,
Chair of Urbanism and Spatial Planning

MOLDOVA
**State Pedagogical University "Ion Creanga"**
Faculty of Education Sciences

MONTENEGRO
**University of Montenegro**
Faculty for Sport and Physical Education

MACEDONIA
**University Sts. Cyril and Methodius - Skopje**
Medical Faculty,
Civil engineering faculty-Department of Structural Mechanics,
Faculty of Mechanical Engineering - Institute of Production Engineering

**University St. Kliment Ohridski - Bitola**
Faculty of Information and Communication Technologies

POLAND
**'Adam Mickiewicz' University of Poznan**
Institute of Linguistics, Department of Korean Philology,
Institute of Prehistory

**Poznan University of Technology**
Poznan University of Technology,
Institute of Mechanical Technology

**University of Economics in Katowice**
Faculty of Informatics and Communication

**Lublin University of Technology**
Institute of Management and Fundamental of Technology

**Poznan University of Technology**
Institute of Mechanical Technology

**Cracow University of Technology**
Faculty of Mechanical Engineering

**Silesian University of Technology**
Faculty of Transport

ROMANIA
**"Babes Bolyai" University of Cluj-Napoca**
Faculty of History and Philosophy

**„Dunarea de Jos" University of Galati**
Faculty of Engineering

**1 Decembrie 1918 University of Alba Iulia**
Faculty of Sciences

**"Politehnica" University of Timisoara**
Faculty of Engineering Hunedoara,
Faculty of Management in Production and Transportation

**University of Bucharest**
Faculty of Geography, Department of Regional Geography and Environment

SERBIA
**University of Belgrade**
Institute for Multidisciplinary Research

**University of Novi Sad**
Faculty of Technology,
Faculty of Science -Department of Mathematics and Informatics,
Faculty of Technical Sciences

SLOVENIA
**University of Maribor**
Faculty of Electrical Engineering and Computer Science

**University of Ljubljana**
Faculty of Natural Sciences and Engineering, Department of Textiles,
Faculty of Health Sciences

SLOVAKIA
**Comenius University in Bratislava**
Faculty of mathematics, physics and informatics

**Catholic University in Ružomberok**
Faculty of Theology, Institute of applied ethics

**Technical University in Zvolen**
Department of Manufacturing Technology and Quality Management

**University of Trnava**
Filozofická fakulta

**Slovak University of Agriculture in Nitra**
Faculty of Economics and Management,
Faculty of Biotechnology and Food Sciences

If you are interested in joining the new network on "New Traffic Solutions" and starting cooperations with universities from CEE, please meet us on

Automotive Hungary stand 101M

(CEEPUS)

or contact the CEEPUS office:

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(Secretary General CEEPUS)
Phone: +43 / 1 / 319 48 50 / 11
email: elisabeth.sorantin@ceepus.info
web: www.ceepus.info

# **PROGRAM** edubiz Symposium,19.10.2017

## Automotive Hungary, Budapest, Room Türkiz

### 10.00 Greeting CEEPUS & Hungexpo

### 10.15 Key Notes: Automotive Investment in CEE vs. European brain drain

- Róbert Ésik, President of Hungarian Investment Promotion Agency (HIPA)
- Csaba Kilián, CEO of Association of the Hungarian Automotive Industry (AHAI) (tbc)
- Olivia Schubert, Audi Hungaria
- Gábor Jóo, Mercedes Benz Manufacturing Hungary
- Zsolt Szoke, Bosch Hungary

### 11.00 CEE Universities – Contributions to the European Future of Mobility

- **The Digital Future of Driving**
  Prof. László Palkovics, Minister of State for Higher Education, Hungary
- **Transport Science in Budapest: Evolving links between Research, Education and Industry**
  Daniel Hörcher, Budapest University of Technology and Economics
- **Secure and reliable Systems in the Automotive Industry**
  Miran Rodič, University of Maribor

### 14.00 Visit of Automotive Hungary, Matchmaking – CEEPUS interdisciplinary network

### 15.00 CEEPUS Essay Challenge on Future of Mobility and Production

- Ideas welcome! Students and teachers from the CEE Region were asked about their visions of new traffic solutions. We present the outcome and future plans for the CEEPUS Essay Challenge

### 15.30 Students ask, HR experts answer: Career opportunities in the automotive technology

### 17.00 Get-together

**Róbert Ésik**
President Hungarian Investment Promotion Agency HIPA

**Csaba Kilián (tbc)**
CEO of Association of the Hungarian Automotive Industry AHAI

**Gábor Jóo**
Responsible for Education & Master Trainer, Mercedes Benz Manufacturing Hungary

**Zsolt Szoke**
Outreach Engineer, Robert Bosch Hungary

**Olivia Schubert**
Head of Educational & Academic Cooperations, Audi Hungaria

**Prof. László Palkovics**
Minister of State for Higher Education, Hungary

**Daniel Hörcher**
Faculty of Transportation and Vehicle Engineering, BME

**Miran Rodič**
Institute of Robotics, University of Maribor

## On-Site-Visit 20.10.2017:

## Bosch Development Center for Mobility Solutions, Budapest

Registration at stand 101M (CEEPUS) or budapest2017@edubiz.de