



WELCOME REMARKS

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Chair, iNEER Board
Rector, VSB – Technical University of Ostrava

Ladies and gentlemen, distinguished guests,

It is my great honour and privilege to have the opportunity to be here with you today at the opening of ICEE 2009 on behalf of the INEER Board, but also on behalf of VŠB-TU Ostrava CZ, which is one of the founding members of ICEE 13 years ago, and which was also the hosting university of ICEE 1999 and ICEER 2004.

This year, the Czech Republic was responsible for the governance of the European Union.

European universities met in Prague to discuss the topic “Facing Global Challenges: European Strategies for European universities” and to analyze the present financial and economic crisis and its impact.

The result has been expressed in the so-called Prague Declaration 2009 as a message to political leaders: combat the global economic and financial crisis through investment in higher education and research.

There are three main reasons for this declaration:

- **Universities are crucial for the future of Europe:** through knowledge creation and by fostering innovation, critical thinking, tolerance and open minds they prepare citizens for their role in society and the economy. Through research-based education at all levels they provide a high-level of skills and innovative thinking.
- **Universities are motors for economic recovery:** by striving for excellence in teaching, research and innovation.
- **Higher education and research needs a European stimulus package,** because Europe cannot afford to run the risk of losing a generation of talented people or of a serious decrease in research and innovation activity.

The most important success factors for European universities in the next decade are enhanced global collaboration, a partnership and presence beyond Europe as a priority for an ever increasing number of universities with diverse missions, to ensure strategic presence and promote a more international outlook among students and staff and developing partnerships for strengthening the various missions of universities, taking account of the needs of partners in curriculum development, research collaboration and innovation activities, in particular embracing the open innovation model of university/enterprise cooperation based on sound project management and improved intellectual property management reflecting respective interests.

The fact that the iNEER community amounts to almost 36 000 members testifies to the foresight of the foundation of this international institution as a family of engineering teachers, researchers and students. It is their

qualities that represent moving forces of innovation and technological development, and as a consequence decisions about our sustainable commonwealth.

Ideas, which have led to the establishment of the iNEER, are today, in times of global financial and economic crisis, only more necessary, as documented by the above mentioned Prague Declaration 2009.

Engineering is always associated with using natural sciences and needs a solid scientific basis. Nevertheless, the goals between scientists and engineers are quite different. Scientists try to exactly understand the natural world, while engineers must use this understanding to come up with new or innovated technologies, machines, products and processes.

The main mission of engineers is to transform ideas into reality and find solutions which could help to increase the quality of human life. Engineering education and research plays a key role in the new knowledge economy. Technical universities and colleges concentrate a high human potential of creative young people. Investment into engineering education is a good investment, because young graduates are best able to transfer new knowledge and technologies into life. We know that today's society, from the historical point of view, is on the highest level of technology's standard, nevertheless a major part of population has a very poor engineering literacy.

In my country the demands of industry to find young engineers are extremely high and can't be fully realized by technical universities because young people prefer to choose easier studying programs, which also leads to better paid jobs and less responsibility in careers than is expected from engineers today.

I am very happy to be here in South Korea, which has the highest prestige in engineering. VSB-Technical University Ostrava, which was originally oriented to the mining and metallurgical industry, has very good cooperation with Hyundai car company – one from the most important investments in the Czech Republic, and we have opportunity to appreciate the high level technical standard and dynamic innovative processes in this company. They are an excellent demonstration of the quality of engineering education in South Korea and I would like to congratulate this success.

The short history of our ICEE conferences shows that the basic idea of ICEE – mutual progress through international partnership is happening and engineering education and innovation are now subjects of the highest interest in the global economy. The role and mission of engineering education is in the process of important transformation.

Global realities such as the ageing of population in advanced countries, increasing expenses for health services, growing population in the developing world, competitive strength based on innovations creating knowledge-based business and creating well paid jobs force us to find a new, more efficient cooperation between the academic and the industrial world.

We are in the process of reengineering the engineering education, which must reflect

- fast changing labour market
- increasing competition in the education sector
- increasing influence of stakeholders
- dynamic development of new technologies connected to frequent changes of curricula
- urgency to increase the attractiveness of engineering education
- change from “teacher driven” to “student centred education”

Complex real-world problems call for innovative forms of education. Solutions to complex problems on the other hand, require creative, flexible and often unusual and approved treatment. There are also additional demands on students and teachers to bridge the gap between university and society and to fulfil the so called “third role” of university.

Universities today are forced to solve complex problems, which often fall outside the traditional borders, problems which need or interdisciplinary or transdisciplinary approach and teamwork. The demands on university graduates have dramatically changed, especially in fields with high social impact.

Graduates are expected to bring the competencies needed to solve complex problem with them instead of acquiring them over a long period of practice. This changes the demands on the university, which has to react

and to prepare graduates with the needed competencies for dealing with not only problems of isolated academic world, but complex real-world problems of stakeholders and politicians. This puts a greater emphasis on combining practical experience with education.

With the traditional single disciplinary approach it is not possible to solve highly complex problems. But it is necessary to emphasize that the call for interdisciplinarity firstly requires the existence of single disciplinary expertise, which can be synthesized.

The existence of single-disciplinary capabilities is a prerequisite for interdisciplinary capabilities, and not alone a sufficient precondition for successful innovation. Intensive interaction between academics and practitioners and a mutual learning process between them helps to solve a new trend called science for society, to exploit academic capacities for innovation.

Acceleration of the development of innovative technologies for broad benefit is not possible without partnerships between universities, the public sector and the private sector.

In such a way there are gains in the benefits for companies, universities, their teachers and students and last but not least for the local economy, for regions and quality of the life in them.

Ladies and gentleman, I am very glad, that these topics are included in the program of ICEE 2009, because we can discuss the progress in different countries, culture, tradition and social – economic environment.

Allow me congratulate the ICEE 2009 Organising Committee on the excellently prepared conference. And I am sure that ICEE 2009 will be a further step in a successful story on international character of engineering education, research and innovation.

Finally I would like to wish all participants a successful conference and many useful personal contacts for the further development of the engineering education and research.

Prof. Ing. Tomáš Čermák, CSc.
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