

CZECH TECHNOLOGY BUSINESS INCUBATORS-OPPORTUNITIES FOR R&D COLLABORATION AND JOINT VENTURES

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Background

Small and medium enterprises (SMEs) employing up to 250 people contribute significantly to the gross national product (GNP) in many countries around the world. Small companies are more flexible, can adapt faster to change and have enthusiastic and devoted management usually identical with the company's owners. Smaller businesses, particularly those engaged in knowledge-intensive, value-added, technology-related activities are understood as being main agents of job and wealth creation.

Development of the SMEs Sector in the Czech Republic in the Early 1990s

Political changes occurring in the Central and Eastern Europe at the end of the 1980s have resulted in radical economic and social changes. Transformation of the state-controlled economy to the competitive market model was characterized by a massive privatization process accompanied by the establishment of small and medium enterprises. SMEs creation in the Czech Republic was a combination of several processes proceeding in parallel. In all parts of the Czech Republic small firms were spinning out of large firms and the science and technology research base. In addition some medium-sized businesses were created as a consequence of the break-up of the former state enterprises. However, most of the SMEs appeared simply because of the national "entrepreneurial spirit". That spirit has survived decades of the centrally planned economy and it was possibly the strongest driving force for establishing new businesses in the country.

Business Incubators

Business incubators are organizations that support the entrepreneurial process, helping to increase survival rates for innovative start-up companies. Only entrepreneurs with feasible projects are admitted into the incubators, where they are offered a specialized menu of support resources and services. The resources and services available for such an entrepreneur include: provision of a physical space, coaching to the management, help in making an effective business plan, administrative services, technical support, business networking, advice on intellectual property and sources of financing. The process of incubation is intended to last around 3-5 years.

Evaluations of business incubators in Europe and the U.S. indicate that 90% of incubated start-ups were active and growing after the first three years of operation, which is a much higher success rate than that observed in start-ups launched without any incubator assistance. Technology-based business incubators are considered to be particularly useful from a policy perspective because they can simultaneously promote knowledge diffusion, technology transfer and high-tech firm creation.

Development of Business Incubators in the Czech Republic

It is the aim of this contribution to review mainly the situation in the field of science-related business incubators in the Czech Republic, i.e. incubators with strong links to the research base. The success or failure of a business incubator is strongly influenced by the overall situation in the country (region). Rapidly changing economic and political situation in the Central and Eastern Europe in the last 15 years has also influenced naturally the development in the sector of business incubation.

Since the political changes in 1989 there has been a considerable interest in developing various business support infrastructures (Fig. 1).

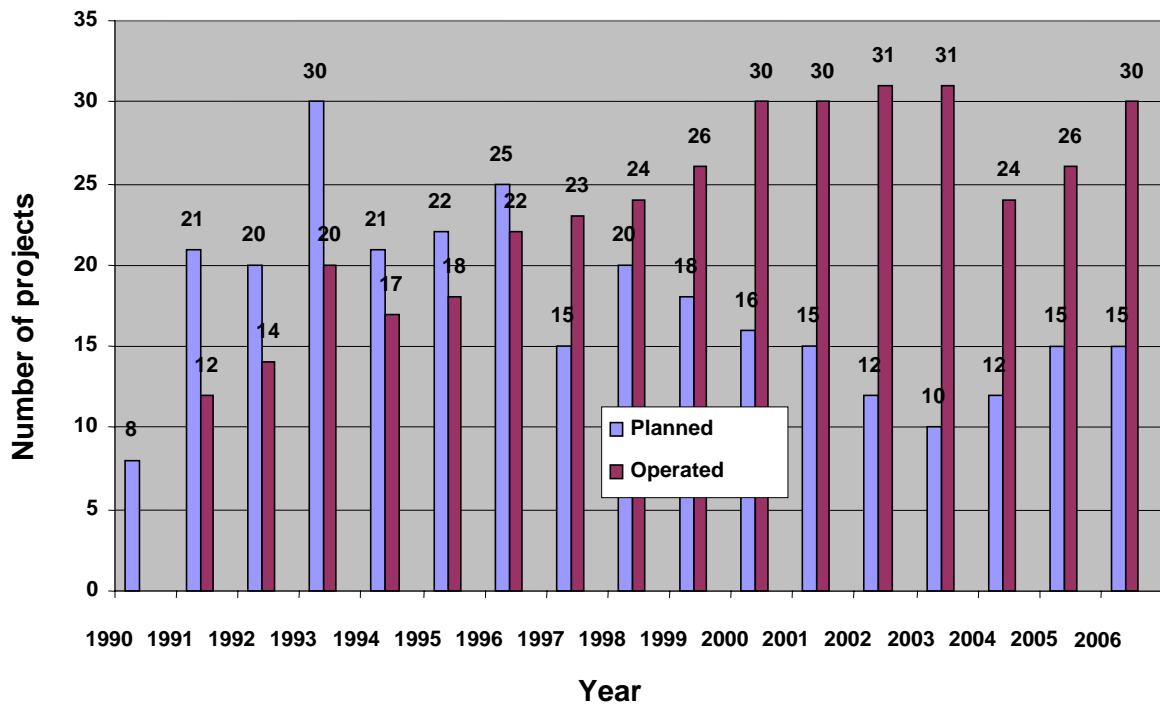


Fig. 1 Number of science and technology parks projects in the Czech Republic in 1990-2006
Source: Science and Technology Parks Association CR

The projects were usually introduced as „science“ and/or „technology parks“ with an implicitly assumed function of business incubation. Science and technology parks and business incubators were understood almost as a universal remedy for treating all the economic illnesses of a region. The role of business incubators was not fully understood, majority of projects was lacking the basic portfolio of business incubation services, resulting in „multi-tenant facilities“ simply offering some space for an affordable price/rent. Very often, the project’s principal goal was to generate some additional income from oversized buildings of former state enterprises, including state-owned research facilities. This is not to say that there were no projects with a clear understanding of incubation functions trying to set up the best incubation environment possible. Such projects were mostly based on funding through the PHARE programme¹ which was not only a source of financial stability but it provided

¹ The Phare programme was one of the three pre-accession instruments financed by the European Union aimed at assisting candidate countries of the Central and Eastern Europe in their preparations for joining the European Union.

also an excellent opportunity to establish professional contacts within the European business incubation industry and to collect valuable practical information regarding day-to-day operation of a business incubator and strategic planning for its further development.

There is traditionally some confusion about the definition of a science park versus a business incubator. An easy way out is to define science-related incubators as relatively small-scale technology-specific initiatives whose principal objective is to convert innovative research results into company start-ups or to facilitate a successful growth of small technology-based companies. As such, science-related (or technology-based) incubators may be understood as “generators of science park companies” while science parks (or technology parks) concentrate fully developed companies and their core business includes property development.

Conditions which led to the creation of a majority of science and technology parks in the Czech Republic have substantially altered during last 5-7 years. While during the 1990s the preference was given to the creation of new job opportunities – the reason was a high increase of unemployment in some regions suffering from the collapse of a strong regional industry caused usually by a loss of principal markets. In the first decade of the third millennium, there is a remarkable change in understanding the role of an incubator by the Czech Government. It is generally accepted that business incubators should, besides their role in creating new business opportunities, also act as a powerful tool for stimulation and development of linkages between creative academic sectors (e.g. universities or research facilities private/state owned) on one hand, and industry, business and trade in general on the other hand.

A proper understanding of principles of support business structures in the Czech Republic resulted in some changes in the legislation (e.g. research institutes can have a share in spin-offs generated from them, tax deduction of research expenses is possible) and most importantly – national funding schemes have allocated substantial amounts for creation and development of science and technology parks, business incubators and technology transfer centres.

Evaluation of science and technology parks carried out regularly by the Science and Technology Park Association CR (www.svtp.cz) shows that there are already some technology business incubators with strong cooperation links to the research base in the Czech Republic. The situation is illustrated by Fig.2.

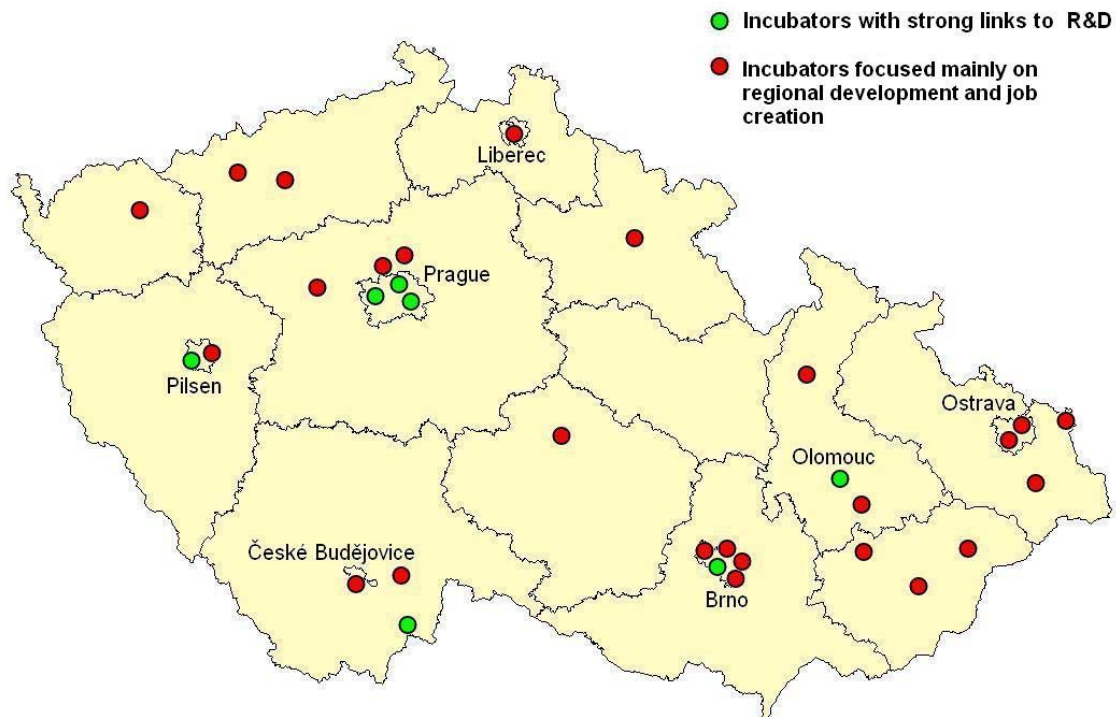


Fig. 2 Business incubators in the Czech Republic (2007)

Source: Science and Technology Parks Association CR

Not surprisingly, incubators with strong cooperation links to research institutions are located close to the national centres of research excellence – cities or regions with a high concentration of research institutions – leading national universities or clusters of research institutes of the Academy of Sciences. Business incubators take usually some form of a “not-for-profit” institution with universities, research organizations and regional institutions as shareholders. Thematic orientation of business incubators varies from incubators sticking closely to the orientation of their “mother” research base to more generally oriented incubators with a wider spectrum of tenant companies. Fig. 2 shows active business incubators or business incubators that are already in an advanced project development stage with their opening for companies planned by the end of 2007.

It may be discussed whether an incubator should follow closely the main scientific orientation of a research institution in their neighborhood or accept any company with innovative entrepreneurial ideas. In this context a coexistence of an excellent research institution and innovative small companies connected by numerous formal and informal collaborative links creates a “real incubator” for new ideas rather than a static model with a little if any collaboration between the research expertise of a university (research institute) and unrelated businesses.

Science-based Business Incubators in the Czech Republic

As far as thematic orientation is concerned, successful science-related business incubators are a natural part of the innovative environment they form jointly with a close university/research institute. Thematic orientation of tenant companies (and the incubator as a whole) is thus more or less “copying” main research directions of the research organization.

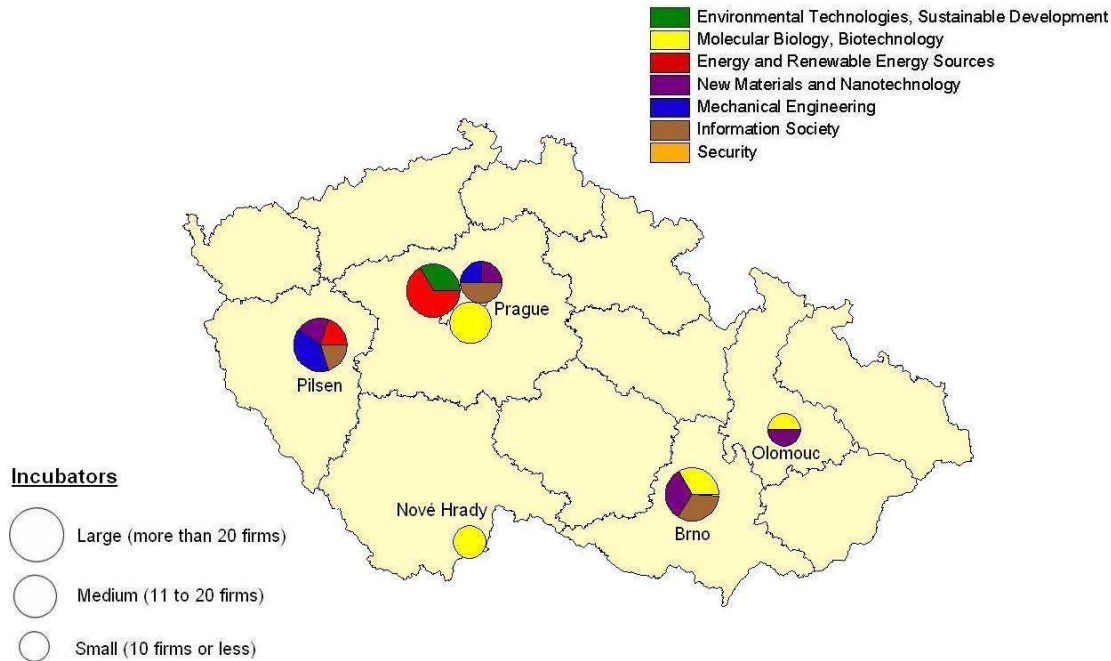


Fig. 3 Science-related business incubators in the Czech Republic (operating facilities or facilities planned to open space for tenants by the end of 2007).

Incubators focused on biotechnology and molecular biology occupy a strong position from the thematic point of view. They are located at prestigious national centres of biotech research in Prague, Brno, Olomouc and Nové Hrady (South Bohemia). Research in energy and renewable energy sources is linked to incubators in Prague and Pilsen, while entrepreneurs involved in new materials and nanotechnology are hosted by incubators in Olomouc, Brno, Pilsen and Prague. Information society has a strong position in incubators in Prague, Pilsen and Brno, mechanical engineering is traditionally located in Pilsen and Prague.

Case Examples of Science-based Business Incubators in the Czech Republic

Science-based business incubators shown in Fig.3 will be briefly described in this section. Their mission is to accelerate transfer of knowledge from the research base to the market by means of a creative environment that combines resources of a major university or research institute and those of small private businesses. Incubators are usually operated by a management team providing a wide range of support services to their tenant companies.

Business Innovation Centre in Pilsen

The Business Innovation Centre (BIC) Pilsen was established in 1992. It is fully owned by the city of Pilsen and provides services to small and medium sized companies in the region. BIC Pilsen has cooperative links with the University of West Bohemia and it offers around 2500 sq.m of space. Since its establishment the BIC has supported more than 50 companies mainly focused on mechatronics, ICT, electronics and new materials. Contact: www.bic.cz .

South Moravian Innovation Centre in Brno

The South Moravian Innovation Center (SMIC) in Brno was established in 2003. Despite its relative short history the Centre is one of the most active components of the Czech innovation infrastructure. It benefits from a strong research base in Brno where several prestigious universities are located. Universities, namely Brno University of Technology and Masaryk University, actively support development of a business incubator with a current capacity of about 1000 sq.m, which will reach 7000 sq.m in the year 2008. Thematically, the incubator is focused mainly on biotechnology, ICT , electronics, research and medical equipment. The Centre also works closely with the city of Brno and regional government. Due to massive financing from the (EU) Structural Funds in the financial period 2007-2013, an excellent research capacity in the city of Brno, the SMIC has a good chance to become one of leading innovation centres in the country. Contact: www.jic.cz.

Technology Innovation Centre of the Czech Technical University in Prague

Technology Innovation Centre (TIC) belongs to the Czech Technical University (CTU) in Prague, the largest and oldest technical university in the Czech Republic (25 000 students, 300 years of history). The business incubator houses mostly university spin-offs, information technology is the prevailing type of business. TIC is a part of the BIC CTU which was set-up in 1991 as a business incubator, technology transfer centre and IPR office. Contact: www.inkubator.cvut.cz .

Centre of Biological Technologies in Nove Hradý

A biotechnological incubator is hosted by the Centre of Biological Technologies in Nove Hradý (South Bohemia). The incubator uses research capacities of the University of South Bohemia and it provides a specific environment for advanced biotech research and small-scale production, including technology halls, clean rooms and a laboratory space. Contact: www.greentech.cz .

Technology Innovation Centre CKD Prague

The TIC CKD Prague is a project utilizing an old factory hall in a brownfield land situated in an industrial area owned by an electrical engineering factory “CKD Prague NE” in the district of Prague 9. Several research institutes of the Academy of Sciences, Faculty of Electrical Engineering of the Czech Technical University, Municipality of Prague 9 and the Chamber of Commerce Prague are among the project partners. Specialized services to incubated companies will be provided by a core project partner – Technology Centre AS CR. A multifunctional building with the total floor area of approximately 5000 sq.m will offer a

mixed space for offices, testing laboratories and small workshops for developing prototypes. The incubator will open its spaces for companies in January 2008, preference will be given to start-ups from the energy sector, particularly from the sector of renewable energy sources. Contact: www.tc.cz .

Business Incubator in Olomouc

The Business Incubator in Olomouc is a relatively small-scale project attached to the Palacky University in Olomouc (Central Moravia). The incubator will open its premises by the end of 2007, tenant companies will be recruited mostly from the area of nanotechnologies and new materials. An expanding Czech nanotechnology cluster in the region should be a supportive element to the incubator development. Contact: www.upol.cz .

Innovation Biomedical Centre in Prague

The Innovation Biomedical Centre in Prague is a small-scale project initiated by the Institute of Experimental Medicine of the Academy of Sciences. The project represents in fact a pilot phase of a more ambitious development foreseen to begin in 2008 which should encompass applied research and development, technology transfer and intensive collaboration with innovation start-ups in the area of biomedical technologies. The main goal is to focus on selected branches of basic research in developmental biology, biocompatible polymer synthesis, neuroscience and transplant surgery and transfer of the research results into practical clinical utilization. Contact: www.iem.cas.cz .

Structural Funds for Research and Innovation Infrastructure

A significant growth of research and innovation infrastructure is foreseen in the next few years in the Czech Republic. Development of this infrastructure includes new research capacities, business incubators and knowledge transfer centres. Financing will be provided mainly by using the EU Structural Funds and will represent the greatest investment ever made by the European Union through cohesion instruments. Total volume of the investment will amount to € 308 billion and will support regional growth and stimulate job creation. Most of the investment will be directed towards economically weaker regions of the EU to remove social tensions and disparities. However, about 16 % of the Structural Funds will be focused on supporting innovation, research capacities and sustainable development. The Czech Council for Research and Development has recently completed a preliminary screening of projects in the Czech Republic considered for financing through the Operational Programme Research and Development for Innovation which will be based on the Structural Funds. The screening has revealed that there is a large number of potential projects on new research institutes, high-tech business incubators and technology transfer centres to be financed from the Structural Funds in the time period 2007-2013. Total financial volume available for that type of investment in the Czech Republic will reach more than € 5 billion (provided jointly by the Ministry of Education and Ministry of Industry and Trade). As the main objective of this paper is to present science (technology)-based incubators in the Czech Republic as potential partners for collaboration with their Japanese counterparts, it is sensible to combine information about envisaged innovation infrastructure supported from the Structural Funds with an overview of existing incubator facilities. Such an innovation infrastructure will

become operational in the next 3 – 5 years when it will be fully ready for collaboration and joint ventures.

Investment into new research and innovation infrastructure within the time period 2007-2013 is illustrated in Fig.4.

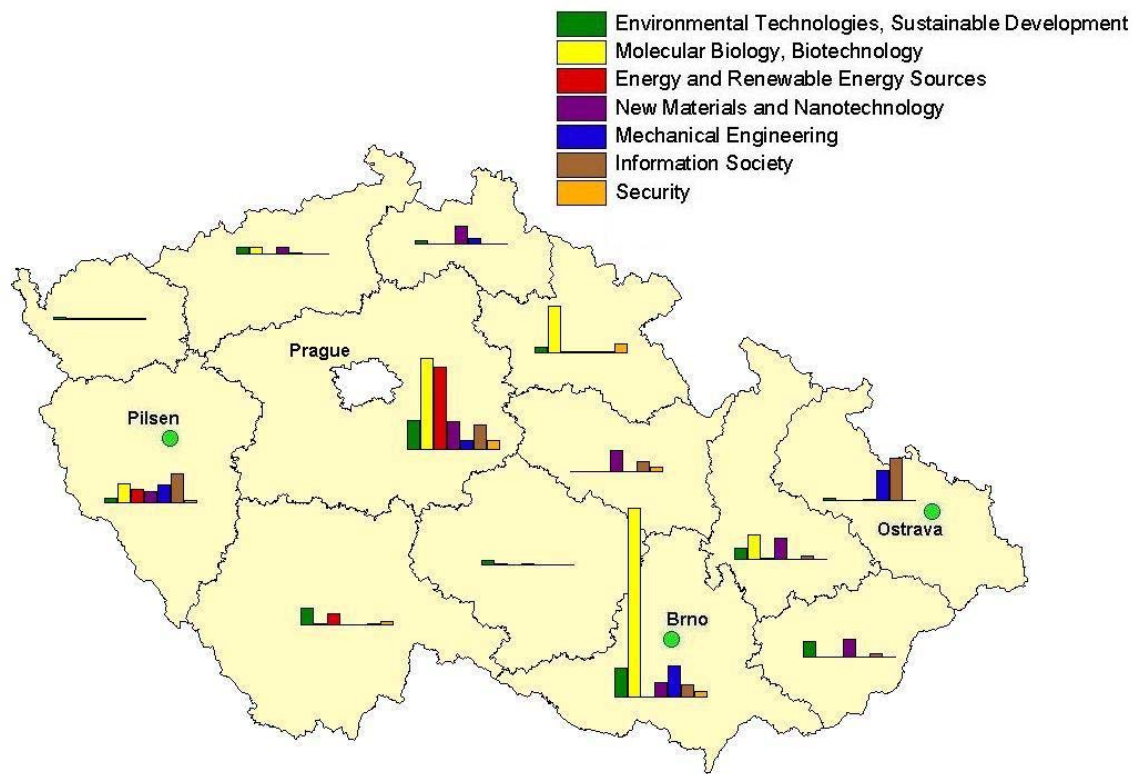


Fig. 4 Structural Funds for the development of new research and innovation infrastructure in Czech regions in 2007-2013 (projects which passed successfully the screening by the R&D Council), total financial volume of € 5,1 billion. Prague (a blank field in Central Bohemia) is not eligible for this type of EU funding.

Source: Council for Research and Development

Placement of majority of the investments is copying the distribution of existing national research and innovation infrastructure to some extent, with one exception – large research institutions in Prague expand their activities out of the city of Prague to the Central Bohemia (often very close to the city border) to become eligible for this type of EU financing. Prague is not eligible due its high value of GDP *per capita* (157 % of the EU average in 2004).

Possible Collaborative Links to Czech Technology Business Incubators

Information presented in the previous section can be summarized in a relatively simple recommendation – suitable partnerships for business collaboration and joint venturing in science-based businesses are expected to succeed in regions with strong research institutions

and existing or planned technology incubators in their proximity. Table I illustrates thematic distribution of potential partners in Czech regions. It should be emphasized that Table I does not represent an overview of all excellent laboratories and research institutes in the Czech Republic in given thematic areas - only such research organizations were selected which, besides excellent research, cooperate with small companies in their own business incubators, encouraging and assisting them in developing new products, technologies and services of a high added creative value.

Table I Thematic distribution of potential partners for collaboration in the Czech Republic

Thematic Area	Region	City	Partner Institution	Contact
Biotechnology, molecular biology	Prague	Prague	Institute of Experimental Medicine*	www.iem.cas.cz
	Central Bohemia	Vestec (near Prague)	Institute of Molecular Genetics* Institute of Experimental Medicine*	www.img.cas.cz www.iem.cas.cz
	South Moravia	Brno	Masaryk University South Moravian Innovation Centre	www.muni.cz www.jic.cz
	South Bohemia	Nove Hradky	University of South Bohemia	www.greentech.cz
	Central Moravia	Olomouc	Palacky University	www.upol.cz
Energy, Renewable Energy Sources	Prague	Prague	Technology Innovation Centre CKD Prague	www.icpi.cz www.tc.cz
	Southwest	Pilsen	University of West Bohemia in Pilsen BIC Pilsen	www.zcu.cz www.bic.cz
	Central Bohemia	Zlatniky (near Prague)	Central Bohemian Innovation Centre	novakova@ard-central.cz

* Institutes belonging to the Academy of Sciences of the Czech Republic

Thematic Area	Region	City	Partner Institution	Contact
New materials and nanotechnology	Prague	Prague	Institute of Plasma Physics*	www.ipp.cas.cz
			Institute of Physics*	www.fzu.cz
	Southwest	Pilsen	University of West Bohemia in Pilsen BIC Pilsen	www.zcu.cz www.bic.cz
	South Moravia	Brno	Brno University of Technology South Moravian Innovation Centre	www.vutbr.cz www.jic.cz
	Central Moravia	Olomouc	Palacky University Olomouc	www.upol.cz/en
Information technology	Prague	Prague	Czech Technical University in Prague	www.cvut.cz
			Business and Innovation Centre of CTU	www.bic.cvut.cz www.inkubator.cvut.cz
	Southwest	Pilsen	University of West Bohemia in Pilsen Business Centre Pilsen	www.zcu.cz www.bic.cz
	South Moravia	Brno	Brno University of Technology South Moravian Innovation Centre	www.vutbr.cz www.jic.cz
	North Moravia - Silesia	Ostrava	VSB – Technical University of Ostrava	www.vsb.cz

* Institutes belonging to the Academy of Sciences of the Czech Republic

Thematic Area	Region	City	Partner Institution	Contact
Mechanical Engineering	Prague	Prague	Czech Technical University	www.cvut.cz
	East West	Pilsen	University of West Bohemia	www.zcu.cz
	South Moravia	Brno		www.vutbr.cz
	North Moravia - Silesia	Ostrava	VSB – Technical University of Ostrava	www.vsb.cz

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