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Measuring performance
The Czech Republic in the ERA

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Welcome message

The development of the European research area (ERA) is considered as the key topic of the Czech EU Council Presidency. The motto of the Czech Presidency is 'Europe without barriers'. This slogan is also the driving force within the sphere of research and development (R & D). The Czech Republic's goal of an ERA without barriers will guide its research agenda and promote the idea of 'Europe competitive and open'.

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Ondřej Liška

The R & D priorities of the Czech Republic are complementarily linked. Three main areas of interest of the ERA Vision 2020 *will be implemented during the Czech EU Council Presidency. Firstly, the development of the excellent existing research infrastructures, secondly, increasing the mobility of researchers and their career and thirdly, the consistent evaluation of investments provided for R & D.*

The framework programmes for research represent the main financial tool through which the EU supports R & D. The Czech research teams have been involved in the framework programmes since the Third Framework Programme (FP3) and the participation and contracted funding has increased since then. This edition of research*eu focus *presents some examples of the outstanding projects with Czech participants, mainly from the Sixth Framework Programme (FP6) and FP6-Euratom. Moreover, the issue gives an overview of the Czech research teams' participation in FP6.*

Other significant topics presented in this supplement are: a general introduction on the system of R & D and innovation of the Czech Republic, the structure of the Czech National Information Network for Framework Programmes and the Czech EU Council Presidency priorities on R & D.

This issue contains more than 20 examples of research projects jointly achieved by Czech, European and/or other international partners. These examples give an insight of the project ambitions and/or achievements and the research potential of the Czech Republic. The chosen projects thematically cover all areas addressed by the framework programmes.

More information on Czech R & D can be found on the websites of the Ministry of Education, Youth and Sports (http://www.msmt.cz), CORDIS (http://cordis.europa.eu/presidency) and Czech RTD (http://www.czechrtd.info).

Ondřej Liška
Minister of Education, Youth and Sports of the Czech Republic

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Frequent acronyms

ASCR	Academy of Sciences of the Czech Republic
CORDIS	Community Research and Development Information Service
CP	Collaborative project
CSA	Coordination and support action
ERA	European research area
FP	Framework programme of the European Community for research, technological development and demonstration activities
ICT	Information and communication technologies
IP	Integrated project
IST	Information society technologies
NoE	Network of excellence
R & D	Research and development
SME	Small and medium-sized enterprise
SSA	Specific support action
STREP	Specific targeted research project

R & D priorities of the Czech EU Council Presidency

The aim of the Czech EU Council Presidency is to contribute to the development of 'ERA without barriers' — with excellent research infrastructures, qualified researchers and free movement of knowledge.

The Czech Republic presides over the Council of the EU between January and June 2009. When the Czech Republic took over the EU Council Presidency, its priorities had to be altered to a certain extent due to the global financial crisis and the incipient economic downturn. However, these priorities have included an obligation to improve the situation in the field of EU R & D from the beginning, and with the crisis they became even more important. This fact was also acknowledged by the European Commission in the 'European economic recovery plan', in which R & D together with innovation are identified as a possible remedy for the current crisis.

The priorities of the Czech EU Council Presidency are part of a wider framework of three presidencies, the so-called Troika. These priorities were drawn together with France and Sweden, the EU Member States presiding over the EU Council before and after the Czech Republic. The common aim of all three presidencies in R & D is to develop an efficient method of impact assessment of R & D investments, and consequently to evaluate the European R & D coordination strategy.

Besides that, the Czech Republic together with France and Sweden, has committed itself to supporting research in the field of information and communication technologies (ICT) and low-carbon technologies, to carry out the 'Strategic energy technology plan' (SET plan) and also to implement the Galileo programme and the project of 'Global monitoring for environment and security' (GMES). The launch of the new European Institute of Innovation and Technology (EIT), headquartered in Budapest, is also a high-priority task.

EUROPE COMPETITIVE AND OPEN, ENERGY-SUSTAINABLE AND SAFE

On a general level, the Czech Republic has chosen five main priority areas for its Presidency. The areas were subsequently summarized as 3E — economy, energy and external relations. However, the original five priority areas still hold and especially two of them are relevant for R & D: 'Europe competitive and open' as well as 'Europe energy-sustainable and safe'.

The priority area 'Europe competitive and open' is closely linked to the implementation of the reformed Lisbon strategy or 'European strategy for growth and jobs'. One of the essential presumptions to increase EU competitiveness is, nevertheless, innovation and quality and quantity of investments to education and R & D. In this context, the Czech Republic has identified the following as the essential problems: insufficient transmittance in the European education system, poor activity on environmental issues resulting in the best brains leaving the EU, and finally, unsatisfactory interconnection between the academic and business spheres. Efforts to reduce these problems have been a long-term issue on the European agenda. A special emphasis will therefore be placed on these problems during the Czech EU Council Presidency.

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The EU is also facing a number of challenges in the field of energy. The Czech Republic sees the accelerating process of climate change, the need of competitiveness on the energy market and the fact that 90 % of oil and natural gas resources are found in politically unstable regions as major issues. This leads to clear assignments for R & D in the form of research on global climate change, on ensuring the safety of networks used for power transmission and on the exploitation of renewable energy sources. Besides that, the essential topic of the Czech EU Council Presidency is the improvement of energy efficiency, again a field with great potential for R & D.

ERA WITHOUT BARRIERS

The well-known motto of the Czech EU Council Presidency is 'Europe without barriers' aiming for a competitive and open Europe. In the field of R & D it consists of developing a functional ERA without barriers, which is the key priority. The ERA is considered one of the main tools of the reformed Lisbon strategy, and therefore as a way to economic growth and competitiveness of the EU.

Complying with this priority, the Czech Republic further concentrates on two topics: large research infrastructures and mobility of young researchers. Additionally, the Czech Republic places secondary emphasis on the already mentioned impact assessment of European R & D programmes on the competitiveness of the EU Member States and of the whole EU respectively. 'Women in research' is another field of interest of no less importance for the Czech EU Council Presidency. A separate conference will be held on this topic.

Both the existence of excellent pan-European research institutes and the presence of highly qualified researchers, who can move within the EU in the scope of their research activities, are generally considered as crucial prerequisites for ERA effectiveness. They also lead to the improvement of the EU's competitiveness which, in terms of R & D and application of R & D results, still lags the United States and Japan. Therefore the Czech Republic identified these two topics as key ones.

LARGE RESEARCH INFRASTRUCTURES

In the framework of research infrastructures, it is the Czech Republic's responsibility to implement the roadmaps of large research infrastructures — the European Strategy Forum on Research Infrastructures (ESFRI) — and to discuss its late 2008 revision. During the discussions, the Czech

Republic wants to advocate an equal development of the EU in terms of regional distribution of research infrastructures. The pursuit of this goal was decided by the Czech EU Council Presidency during the preparation of the draft conclusions of the EU Competitiveness Council meeting at the beginning of March 2009 in Brussels, Belgium.

The issue of the regional dimension of the ERA in connection with research infrastructures was dealt with at a special conference entitled 'Research infrastructures and the regional dimension of ERA' held in Prague at the end of March 2009. The long-term priority of the Czech Republic remains the development of a European strategy for the distribution of research infrastructures as well as the availability of financial resources for their development within the Seventh (FP7) and Eighth Framework Programmes (FP8).

The Czech Republic's research infrastructure agenda concludes with a final challenge: to come to an agreement on the final version of the regulation stipulating the legal framework for European research infrastructures.

MOBILITY OF YOUNG RESEARCHERS

The problem of barriers to mobility of young researchers is dealt with in the operating programme of the Czech EU Council Presidency. The aim is to analyse the effects of currently applicable measures, especially *The European Charter for Researchers* and *The Code of Conduct for the Recruitment of Researchers*, but also the directives on specific admission procedures of third country citizens for the purpose of scientific research. In this respect, a scientific conference 'Researchers in Europe without barriers' was held in Prague at the end of April 2009. The Czech EU Council Presidency intends to contribute to the reform of the European labour market in the field of R & D human resources and in the subsequent full enforcement of the so-called fifth freedom, meaning free movement of knowledge.

THE IMPACT ASSESSMENT OF R & D INVESTMENT

The major topic of the whole presidential Troika is, as was already mentioned, the impact assessment of R & D investments. The Czech Republic responded to the European Commission report on FP6 published during the French EU Council Presidency, and successfully held a conference on impact evaluation of European R & D programmes in cooperation with the EU. The 2009 'European forum on research and development impact assessment' (Eufordia 2009) conference, co-organised by the Technology Centre of the Academy of Science of the Czech Republic (ASCR), started the discussion on the impact assessment methodology and especially its effectiveness concerning the already concluded FP6 and mid-term review of FP7. The results of this discussion should be included in the May 2009 Competitiveness Council conclusions.

LJUBLJANA PROCESS AND ERA VISION 2020

A significant priority of the Czech EU Council Presidency, which as a matter of fact covers all the above-mentioned priorities, is the Ljubljana process. This is a new partnership between EU Member States that should speed up the development of a functional ERA with free movement of knowledge. This strategy was officially launched during the Slovenian EU Council Presidency at the end of May 2008. The Czech Republic, together with France and Sweden, has committed to proceeding with the strategy during their presidential mandates.

On the basis of the EU Green Paper entitled *The European Research Area: New Perspectives*, five special initiatives on ERA development were launched in support of the Ljubljana process. Another important tool, which is a part of the Czech EU Council Presidency portfolio, is the strategic document *ERA Vision 2020* approved by the EU Council in December 2008. The *ERA Vision 2020* discussion should be the centre of attention at the informal meeting of EU ministers responsible for R & D, taking place in Prague at the beginning of May 2009.

BIG CHALLENGES, BIG APPEALS

The Czech EU Council Presidency is facing a number of challenges and appeals — the aim of developing ERA without barriers alone is very ambitious, though highly desired. Indisputably, the way to the fifth freedom will not be easy. The Ljubljana process will be a demanding continuous process; however, the Czech EU Council Presidency will certainly contribute to its success.

Ministry of Education, Youth and Sports of the Czech Republic.

The Czech Republic supports large infrastructures for R & D

In relation to the development of the ERA, activities of the European Commission and the EU Member States in the field of large infrastructures for research have become more intensive since 2006.

Some of the projects found in the roadmap prepared by the European Strategy Forum on Research Infrastructures (ESFRI) in 2006 and updated at the end of 2008, are proposals for entirely new infrastructures, others are focused on modernising and expanding existing infrastructures. In accordance with the Green Paper on the ERA, construction and modernisation of research infrastructures is one of the pillars of ERA development.

The Czech Republic welcomes this trend and tries to make use of it with regard to its specific potential and needs. For this purpose, the Ministry of Education, Youth and Sports of the Czech Republic, in co-operation with the Council for R & D and following a discussion with other relevant Czech bodies, prepared the 'Interdepartmental concept for support of large infrastructures for R & D until 2015'. A large infrastructure for R & D and innovation is, in this sense, understood to mean a unique research facility, including its acquisition, related investments and ensuring its operation, all of which is necessary for integrated R & D activities with high financial and technological requirements. Such a facility is approved by the government and established by one research organisation for use by other research organisations as well.

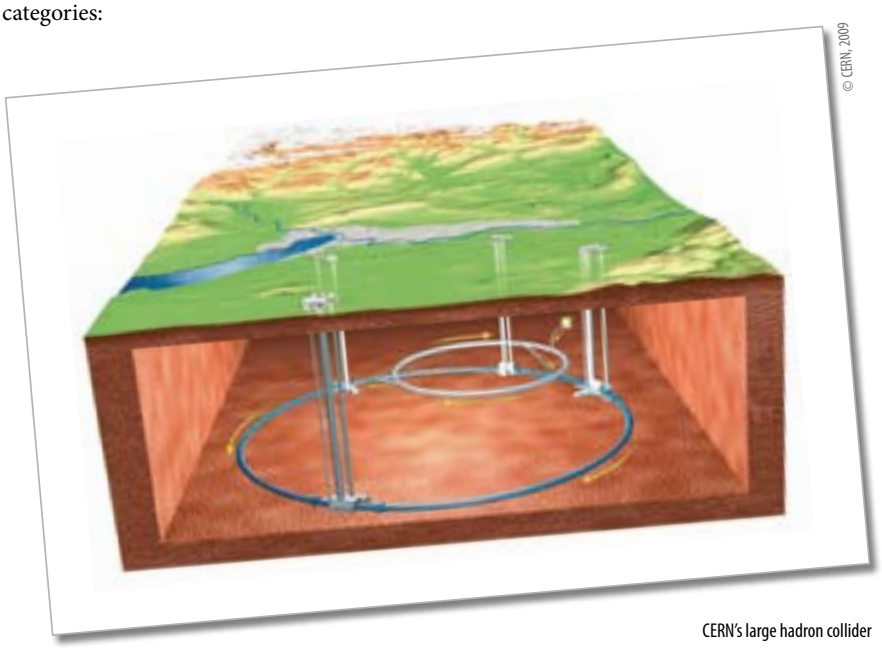
Large research infrastructures in the Czech Republic fall into one of the following categories:

- they are either included in the list of big projects of the 'Operational programme R & D for innovation';
- or included in the list of selected projects from the ESFRI roadmap in which the Czech Republic participates (HiPER);
- or they can be projects in which the Czech Republic participates on the basis of an international agreement (Conseil Européen pour la Recherche Nucléaire, CERN).

The financial budget for the realisation of the afore-mentioned concept is included in the budget chapter of the Ministry of Education, Youth and Sports of the Czech Republic within the medium-term plan of expenditures for R & D from the state budget until 2011. Expenditures for the years 2012–15 will be included in the long-term prospect for financing R & D.

The Czech Republic currently participates in international projects of large infrastructures for R & D in the following areas:

- Energy (JHR, HiPER);
- Social sciences and humanities (Cessda, Clarin, SHARE);
- Material sciences (ESRF Upgrade, ILL 20/20);
- Environmental sciences (ICOS);
- Biomedical sciences (Instruct, Infrafrontier).



CERN's large hadron collider

On top of that, the Czech Republic endeavours to become the host for the seat of the planned new large infrastructure for research, the Extreme Light Infrastructure (ELI), and has included the construction of ELI in the list of large and promising projects of the 'Operational programme R & D for innovations'. The official candidature was submitted to ESFRI on 20 September 2008. The Institute of Physics ASCR represents the Czech Republic in the international partnership of the project and coordinates Czech teams.

A locality in the vicinity of the Hodkovice-Zlatníky municipality in the Středočeský region satisfies the broad range of conditions necessary for the seat of this multi-purpose laser centre, including a professional background (Prague universities and research institutions) and transport accessibility (an international airport, highways D1, D5, and the future D3). Experts from the Czech Republic and European professional circles were able to verify these facts, both at the international conferences organised in Prague during the Czech EU Council Presidency and in Brussels, for example, when the Czech candidature was presented in the Czech Liaison Office for R & D (CZELO) on 10 March 2009, or in the Committee of the Regions during the 'Day of Czech regions' on 1 April 2009.

Technology Centre ASCR.

The assessment of using framework programmes — a priority of the Czech EU Council Presidency

The Czech Republic gives particular attention to the question of impact assessment of R & D investments during the Czech EU Council Presidency. The aim is to contribute to the debate on the evaluation of research results and to advance the establishing of research policies on the basis of its demonstrable outcomes and impacts. A document concerning FP6 ex-post evaluation, submitted by the European Commission at the beginning of 2009, was one of the inputs to this debate.

The question of impact assessment of the framework programmes becomes more significant within the scope of the Ljubljana process priorities and the European Commission initiatives in the context of the ERA Green Paper. FP7 interim evaluation, which will proceed in 2010, and new initiatives for European research in 2020 support these activities even more.

The 'European forum on research and development impact assessment' (Eufordia 2009), an international conference, was held under the Czech EU Council Presidency in February 2009 within these priorities. Two events that took place in Brussels, Belgium, at the end of 2008 were preliminary events for the Eufordia 2009 conference, namely the workshops 'ERA-in-action workshop — impact assessment of European framework programmes in the European research area' held in September 2008 and 'CLORA & CZELO & STOA workshop: evaluation and impact assessment of European framework programmes for research and development' held in December 2008.

IMPACT ASSESSMENT OF EUROPEAN FRAMEWORK PROGRAMMES IN THE ERA

The workshop 'ERA-in-action workshop — impact assessment of European framework programmes in the European research area', which took place on 24 September 2008 in Brussels, focused on the ex-post impact assessment of framework programmes, especially in terms of impact on competitiveness and innovation of the national economies. Special attention was paid to the question of methodologies used to conduct the impact studies, data selection and utilisation of different criteria and tools. Three national studies (Czech, Finnish and Swiss) were presented in detail during the workshop.

The situation in other European countries in this field was presented by approximately 40 experts at the round table discussion. The experts shared their best practices and discussed problems they encountered while conducting studies evaluating the programmes' impact on the R & D support. At the end of the seminar assessment, methodologies and existing studies were also introduced by the representatives of the European Commission's Information Society and Media DG and Research DG.

The workshop was organised by the Czech Liaison Office for R & D (CZELO) within the Informal Association of Brussels-based Non-profit R & D Liaison Offices (IGLO) network.

EVALUATION AND IMPACT ASSESSMENT OF EUROPEAN FRAMEWORK PROGRAMMES FOR RESEARCH

The 'CLORA & CZELO & STOA workshop: evaluation and impact assessment of European framework programmes for research and development' was jointly organised by CZELO and the French Club des organismes de recherche associés (CLORA), in cooperation with the European Parliament's Science and Technology Option Assessment (STOA) body. The event took place in the European Parliament on 3 December 2008. Over 200 people turned up at the event organised in the context of the French EU Council Presidency.

The first section of the workshop presented an overview of the methodologies for conducting studies on impact assessment of framework programmes. The Commission presented its evaluation strategy while experts on given problems introduced existing tools and methods. The existing studies focused on specific research topics (ICT), instruments (Networks of excellence, NoE), research institutes Joint Research Centre (JRC), small and medium-sized enterprises (SMEs), industry and research organisations) and national studies (Sweden). The event was concluded by a debate, during which representatives of the European Court of Auditors and others tried to answer the question of how to implement the results of these studies in practice.

EUFORDIA 2009

Eufordia 2009, a Czech EU Council Presidency event, was held in Prague on 24 and 25 February 2009. The conference was organised jointly by the Ministry of Education, Youth and Sports and the Technology Centre ASCR. The gathering was attended by more than 260 participants from Europe and other countries.

The conference was opened by the Minister of Education, Youth and Sports of the Czech Republic, Ondřej Liška. In his speech, Mr Liška emphasised the need to spend public money reasonably and accountably. The minister's introduction was followed by a video-speech from the Commissioner for Science and Research Janez Potočnik, who acknowledged in

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Peter Fisch (Head of Unit, Research DG, European Commission), Julia Lane (Programme Director, NSF, United States), Theodoros Karapiperis (Head of Unit, European Parliament), Václav Pačes (President of the ASCR), Erik Arnold (Director, Technopolis), Philippe Laredo (Université de Paris-Est and University of Manchester), Vlastimil Růžička (Deputy Minister of MEYS)

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particular this successful initiative taken by the Czech EU Council Presidency.

The conference was divided into four thematic sections. In the first one, the FP6 ex-post evaluation report elaborated by an expert group appointed by the European Commission was introduced by Professor Ernst Rietschel, a chair of the expert panel. The need to change the whole culture of R & D programmes evaluation is emphasised in the report. The conference participants expressed their support for the report conclusions and discussed the European research question with an ambitious goal to develop an environment in Europe that would enable even individual countries to attain international competitiveness.

In the following section, examples of national impact assessment studies — Spanish, Czech and Swedish — were introduced, as well as the presentation of a study by the Commission's Information Society and Media DG dealing with the ex-post evaluation of information society technologies (IST) research in FP6. Each of the presented studies was quite specific. The Swedish one, for instance, aimed at framework programme impact on the industry while the Czech one was based on bibliometric measuring of Czech framework programme participation.

The third section entitled 'Principles and techniques for framework programme ex-post evaluation and impact assessment', aimed at the practical aspects of evaluations and was divided into two parallel sections. One of them dealt with principles of evaluation and impact assessment, and the second with specific techniques and methods for measuring the impact of R & D programmes.

The final part of Eufordia 2009 was a panel discussion moderated by Vlastimil Růžička (Deputy Minister of Education, Youth and Sports) and Philippe Laredo (Université de Paris-est and University of Manchester). Among the participants were Václav Pačes (President of the Czech ASCR), Theodoros Karapiperis (European Parliament), Erik Arnold (Technopolis), Peter Fisch (European Commission, Research DG) and Julia Lane (National Science Foundation, United States). The panel discussion approached such topics as the American reaction to the financial crisis in form of budget increase to the benefit of R & D, education and open access to data and information.

The conference was concluded by Deputy Minister Vlastimil Růžička, who presented the conclusions and recommendations of Eufordia 2009. They express the need to establish a database of project results which, if possible, should be based on open access and made available so that independent experts can carry out further studies and analyses, and for the EU Member States to continue to conduct national studies assessing the impact of their framework programme participation.

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'The research impact assessment is essential for its funding. As it is the case with each large budget, also in the case of science and research, it is necessary to know the effectiveness of what we spent on,' added Mr Růžička to the conference results. The Czech EU Council Presidency will try to achieve at least a little progress on the fulfilment of the initiatives to establish appropriate intelligence registration systems of scientific research results on the national as well as European level.

Information on the Eufordia 2009 conference, including presentations, conclusions and recommendations, is available on this website: http://www.eufordia2009.eu

Technology Centre ASCR.

Assessment of participation of the Czech Republic in FP6 and FP6-Euratom

PROJECT PREPARATION AND SUCCESS RATES OF THE CZECH REPUBLIC

Altogether, 213 calls for proposals were published under FP6 in the 2002–06 period for which the European Commission received more than 56 000 project proposals. The preparation of these offers involved more than 390 000 teams worldwide.

In the 2002–06 period, 6 224 Czech teams in total were involved in the preparation of 4 766 FP6 project proposals. Based on the evaluation performed by groups of international evaluators, the Commission decided to financially support 876 projects carried out by international consortia with the participation of 1 068 Czech teams altogether. The total project success rate (i.e. successful projects as a percentage of all proposals with Czech participants) amounted to 18.4 % and the participation success rate of Czech teams reached 17.2 %.

Both the project and participation success rates of the Czech Republic were slightly lower than the average rates across FP6. It is obvious that individual thematic and horizontal priorities of FP6 vary in their success rates. The bar chart in Figure 1 compares the participation success rate of Czech teams with the total success rate of the older EU Member States and the newer EU Member States (in this case including the Czech Republic). It is obvious that in all the seven thematic priorities of the first specific programme, the success rate of the first 15 EU Member States exceeds that of the 12 newer EU Member States. This is not the case, however, in horizontal priorities, where in ERA-NET (European research area network) type projects (focused on coordination of national grant agencies and other national providers of financial support for R & D to create new European transnational programmes, whose projects are solved by international consortia) the success rate of the 12 newer EU Member States outperformed the first 15 EU Member States. Higher success rate of the 12 newer EU Member States is also reported in the programme for the coherent development of national research and innovation policies and also in research infrastructures.

As for the Czech Republic, the success rate of Czech teams was higher than that of the first 15 EU Member States in aeronautics and space research. The Czech Republic recorded considerably higher success rates than the first 15 EU Member States in those priorities which focus on better networking and coordination of national research, i.e. on 'coherent development of national policies' and 'coordination of EU research' through ERA-NET projects. These priorities, however, have drawn only a small share of the FP6 budget. In the priorities with the largest budgets, i.e. IST and NMP, the success rate of the Czech Republic was lower when compared to the first 15 EU Member States but also the 12 newer EU Member States.

A further analysis revealed a negative correlation between the number of project proposers and their success rate, i.e. the higher the number of project proposers from the Czech Republic, the less successful they were. Even though the success rate of the Czech Republic does not markedly differ from that of the first 15 EU Member States (as shown in Figure 2), the first 15 EU Member States' data no more confirm the negative correlation between the success rate and the number of proposers from the first 15 EU Member States.

BASIC CHARACTERISTICS OF THE CZECH PARTICIPATION IN FP6 PROJECTS

The European Commission concluded a total of 10 058 contracts for the implementation of projects under FP6. The total budget of these projects amounts to EUR 25 700 million and the Commission contribution from the FP6 budget accounts for EUR 16 700 million. These projects will be carried out by international consortia, which altogether consist of 74 400 teams from all over the world.

A total of 1 068 teams from the Czech Republic have been involved in the implementation of 876 projects of FP6 and FP6-Euratom. Thus the Czech Republic participates in 8.7 % of projects supported by FP6. The eligible costs of projects with participants from the Czech Republic amount to EUR 5 436 million.

The Czech participants represent 1.44 % of all the participants, and the amount contracted by the Czech teams equals approximately 0.78 % of the amount which has so far been allocated by the European Commission from the FP6 budget. The average budget for a Czech team participation amounts to approximately EUR 182 900 and the average

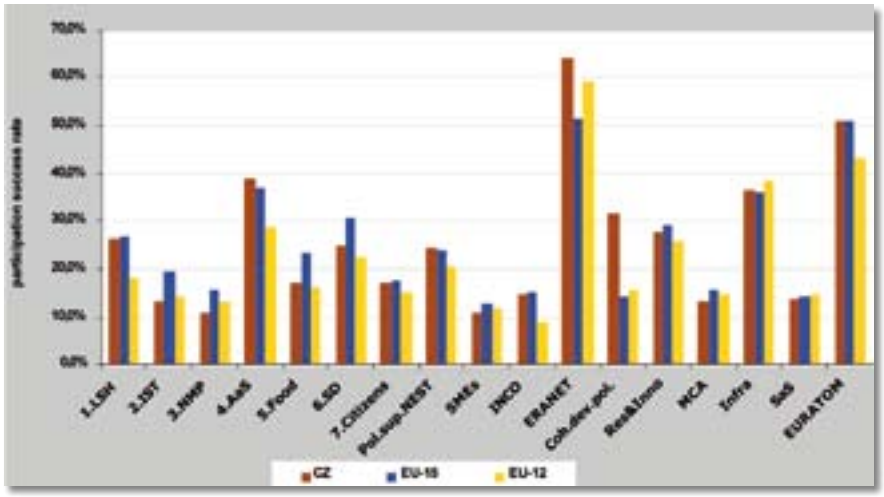

Figure 1 — the bars portray the participation success rate of teams from the Czech Republic (brown), EU-15 (blue) and EU-12 (i.e. new EU Member States including the Czech Republic) in FP6 priorities.

ABBREVIATIONS USED IN FIGURE 1 DESIGNATE THE FOLLOWING FP6 PRIORITIES:

1. LSH:	Life sciences, genomics and biotechnology for health	INCO:	Specific measures in support of international cooperation (with non-EU Member States)
2. IST:	Information society technologies	ERANET:	Support to coordination of research activities in the EU
3. NMP:	Nanotechnologies and nanosciences, knowledge-based functional materials, new production processes and devices	Coh.dev.pol:	Coherent development of national research and innovation policies
4. AaS:	Aeronautics and space	Res. Inno:	Programmes for support of research and innovations
5. Food:	Food quality and safety	MCA:	Human resources and mobility (the so called Marie Curie actions, MCA)
6. SD:	Sustainable development, global change and ecosystems	Infrastr.:	Programmes supporting the use of research infrastructures on a European scale
7. Citi:	Citizens and governance in a knowledge-based society	S a S:	Science and society
Pol.sup.-NEST:	Research for policy support and New and emerging science and technologies		
SMEs:	Specific research activities for small and medium-sized enterprises		

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contribution requested by a Czech team from the European Commission accounts for approximately EUR 122 600.

The scatter plot in Figure 2 shows international comparisons of the number of participations of EU Member States in the funded projects. It clearly indicates that the highest number of participations in contracted projects come from Germany followed by the United Kingdom, France, Italy, etc. Apparently, the number of participations strongly correlates with the size of the population. Therefore, for the purpose of comparison the numbers of participations from individual countries are calculated per 1 million inhabitants as indicated in the bar chart in Figure 2 (the countries are ranked by the decreasing value of this indicator). In the Czech Republic, there are 105 participations per 1 million inhabitants, which ranks us 21st among all the EU Member States, or 6th among the 12 newer EU Member States. In both cases the position of the Czech Republic is stable and identical with that at the time of distribution of the first sixth, the first third and also the first half of the FP6 budget.

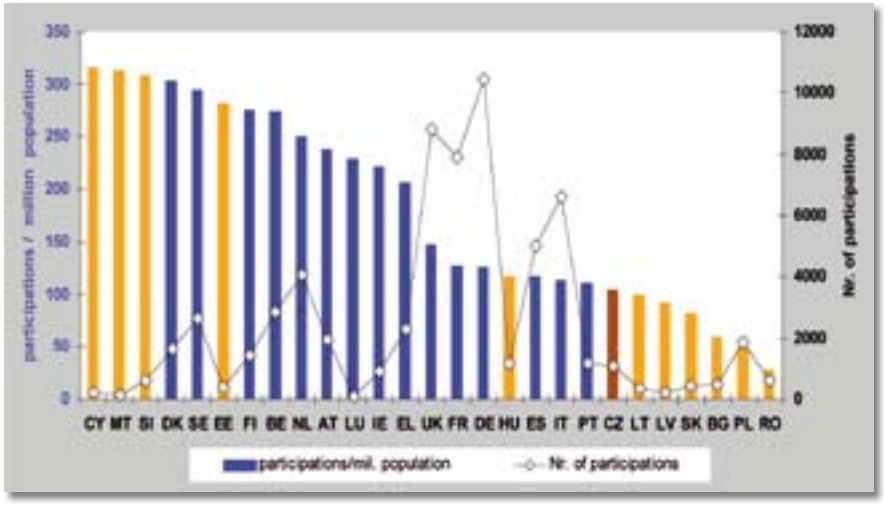

Figure 2 — scatter plot (dot line) shows the participation of the EU Member States in contracted projects under FP6 (by 31 January 2008), the bars present the number of participations per 1 million inhabitants. The yellow bars represent the 12 newer EU Member States.

According to Eurostat data from January 2007, in the period from 2002–06 the Czech Republic spent annually more than 1.3 % of its GDP on R & D. As illustrated by the chart, the position of the Czech Republic is somewhere in the middle in the group of 11 EU Member States (HU, ES, IT, PT, CZ, LT, LV, SK, BG, PL, RO), which — with the exception of Italy — on the contrary spent less than 1 % of their GDP on R & D. Yet, the correlation between the amount spent on R & D at the national level and the total number of participations in the framework programme can be demonstrated. An analysis of this relation, however, is not to be included in this article. We shall therefore restrict ourselves to articulating the assumption that the 'stated comparisons indicate that the total number of Czech teams' participations was to be higher so that the Czech Republic joins the group of countries which spend more than 1.3 % of their GDP on R & D.'

SCOPE AND STRUCTURE OF INTERNATIONAL COOPERATION OF CZECH TEAMS

In the implementation of 876 'Czech projects' (i.e. projects with Czech participants), a total of 1 068 Czech teams participated who were members of 876 consortia composed of 11 205 teams from the first 15 EU Member States and 1 659 teams from the 12 newer EU Member States and 1 531 teams from countries outside the EU.

Altogether, the Czech teams cooperated with 14 395 teams from all over the world. It is evident that FP6 created the conditions for an unprecedented scope of international cooperation for Czech teams. It is also quite clear that the largest share in this cooperation came from teams based in the EU Member States.

The bar chart in Figure 3 presents the number of EU participations in projects, carried out with the involvement of Czech teams. The chart also gives the breakdown of teams of the respective country by thematic priority (of the 'Specific programme for research, technological development and demonstration', SP1); the activities of the second and third specific programmes are aggregated into a single value (in this chart those are the parts of the bars marked SP2, 3).

The Czech teams obviously cooperated the most with teams coming from large countries of more than 35 million inhabitants, i.e. Germany, Spain, France, Italy and the United Kingdom. As regards the 12 newer EU Member States, the Czech teams most frequently cooperate with Poland. It was to be expected that the number of cooperating teams will be proportional to the size of the budget allocated to individual priorities. This, however, has not been confirmed by the respective analysis: the chart indicates that e.g. the frequency of participations involving the first 15 EU Member States in the 'Sustainable development, global change and ecosystems' (SD) priority differs only insignificantly from the frequency in the IST priority, even though the IST budget was several times bigger than the budget for the SD priority.

Relatively low correlation between the number of participating teams and the budget in individual thematic priorities has a number of reasons and also characterises the priorities of Czech R & D. Moreover, it individual thematic priorities with a different composition of projects (e.g. in the area

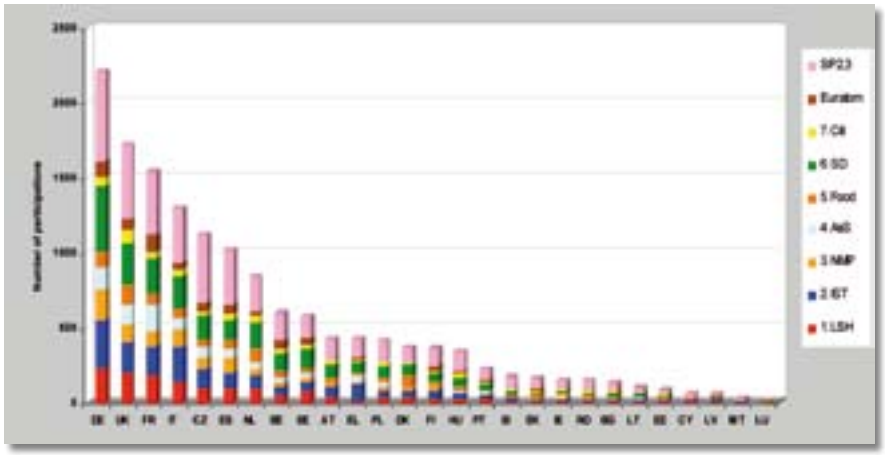

Figure 3 — distribution of 12 864 teams from the European Union, which cooperated with the Czech participants in the implementation of projects under FP6. The internal divison of the bars corresponds to the distribution of given country teams according to thematic priorities of FP6 and Euratom.

of sustainable development there were more NoE than in the area of information technologies) in the end impacted the number of participants.

SUMMARY CHARACTERISTICS OF THE PARTICIPATION OF THE CZECH REPUBLIC IN PRIORITIES OF THE FP6 AND FP6-EURATOM PROGRAMME

The bar chart in Figure 4 presents the total number of participations of Czech teams in individual priorities of FP6 and FP6-Euratom. The chart suggests that the highest number of Czech participations, namely 163, is reported by the sixth thematic priority which covers three areas (energy, climate change and transport), followed by the participation in the IST priority (135). The third place is taken by participation in projects conducted for the benefit of SMEs (109). The portfolio of Czech participation in the FP6 priorities (i.e. distribution of Czech participation in the FP6 priorities expressed in %) differs from both the final portfolio of the 12 newer EU Member States and that of the first 15 EU Member States. Both these groupings show the highest percentage of participation in the IST priority, to which the largest share of the FP6 budget was allocated. Concurrently, the Czech Republic reports a markedly lower percentage of participation in the LSH priority compared to the 12 newer EU Member States and especially the first 15 EU Member States.

The largest contribution is requested by teams participating in the IST priority projects (EUR 25.787 million), followed by the LSH priority (EUR 16.944 million) and the SD priority (EUR 16.685 million). In the AaS priority, the Czech teams request altogether EUR 13.926 million, which represents approximately 11 % of the total amount requested by all Czech teams and simultaneously twice as much share as requested by the first 15 EU Member States in this priority (and four times as much share as that received by the 12 newer EU Member States).

The high success rate of the Czech Republic in the AaS priority is brought about by the participation of Czech teams in aeronautics research. The lowest support is received by the Czech teams in priorities or specific programmes with only limited budgets, i.e. the 'EU cooperation with third countries' (INCO), 'Science and society' (S & S), 'Coherent development of national research and innovation policies' (Coh.Dev.Pol) and 'International coordination of national/regional programmes of research and innovation' (ERA-NET) schemes.

An important measure of the participation is thus the share of support received by the Czech teams of the total amount distributed under the respective priority. Altogether the teams from the Czech Republic contracted 0.86 % of the up to now allocated FP6 budget for the EU Member States. The bar chart in Figure 5 gives the shares of the budget allocated for the EU Member States under the individual priority contracted by the Czech teams. The highest share of the allocated budget was granted to the Czech Republic in Coh.Dev.Pol (3.5 %). The participation in FP6-Euratom, in which the Czech teams received 2.3 % of the distributed budget, and in research activities for SMEs, where the Czech teams received 1.7 % of the budget, was also very successful. These three areas, however, only benefited from a small budget.

As to the thematic priorities, the Czech Republic was most successful in the Citizens priority, under which the Czech teams received 1.45 % of the distributed budget. In the AaS priority, the Czech Republic received 1.42 % of the distributed budget, which is the highest share ever granted to any of the newer EU Member States from the budget of any thematic priority. On the contrary, in those priorities which availed of the largest budgets, i.e. IST, LSH and NMP, the Czech teams received 0.79, 0.74 and 0.80 % of the allocated budget, respectively.

CZECH INDUSTRY IN FP6

The industrial teams represent approximately 20 % of all EU participants. There are a number of reasons to explain the lower share of industrial teams. There is no point however to use the 'European climate' as an excuse, which is often characterised as 'Europe produces a high number of scientific articles, but lags behind in the application of new knowledge'. It must nevertheless be acknowledged that the share of industrial teams in the individual EU Member States fluctuated substantially: while it exceeded 25 % in Germany, in a number of newer EU Member States it failed to reach 10 %.

The chart in Figure 6 presents the ranking of individual EU Member States based on this share. It is obvious at first sight that in a majority of the first 15 EU Member States the share of industrial teams was higher than that in the 12 newer EU Member States.

The bar chart in Figure 7 gives the absolute number of industry participations in individual EU Member States. The EU

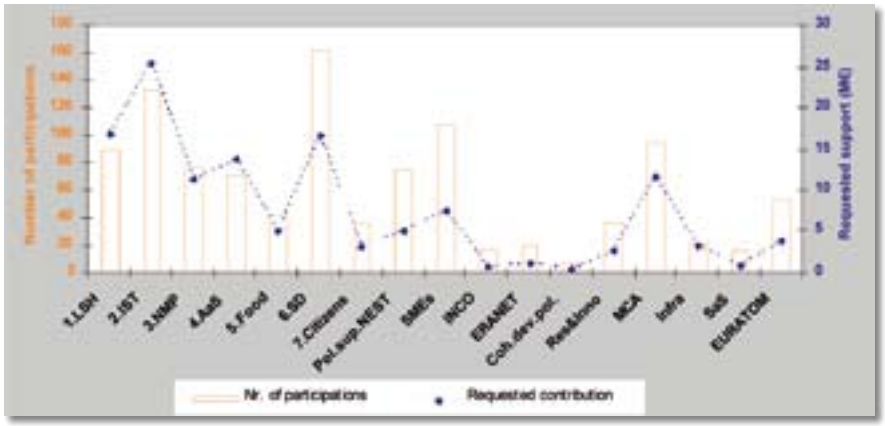

Figure 4 — number of participations (bars) of Czech teams and their requested contribution (broken line) in thematic priorities/specifically programmes of FP6 and FP6-Euratom.

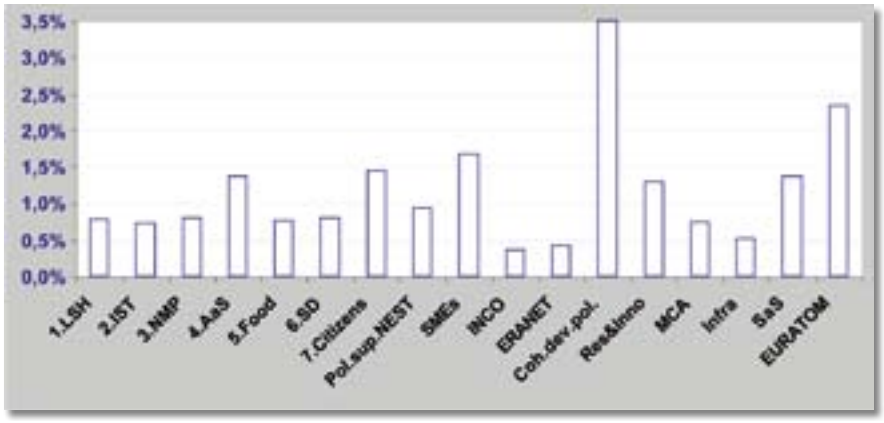

Figure 5 — the bar chart gives the share of the total contribution granted by the European Commission for the participation of the EU Member States for FP6 received by the Czech teams in the individual areas.

continued on page 12

continued from page 11 **'Assessment of participation of the Czech Republic in FP6 and FP6-Euratom'**

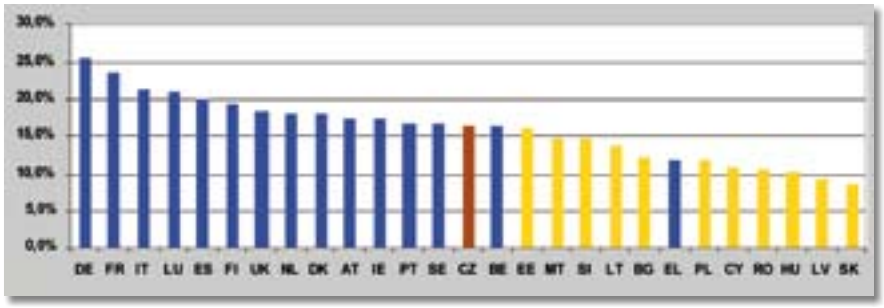

Figure 6 — share of industry participations in individual EU Member States.

The bar chart in Figure 8 shows what percentage of industry eligible costs of the whole EU is represented by the eligible costs of Czech industrial teams and the 12 newer EU Member States industrial teams. The total eligible costs of industrial teams from the 12 newer EU Member States should be about 4 %, which corresponds to their contribution to the EU budget (and thus to the FP6 budget). The chart indicates that this value is not achieved in the FP6 thematic priorities.

Member States are ranked based on the dot chart, which gives the percentage of eligible costs of all the industrial teams in the given EU Member State of the total eligible costs of industrial teams across the EU (i.e. EU Member States industrial eligible costs = 100 %). The share of Czech industrial teams was 0.78 % of the total eligible costs of all the industrial teams in the EU Member States, which helped the Czech Republic rank 15th among all EU Member States, or 1st among the 12 newer EU Member States. As indicated by the detailed comparison, the number of industry participations of the Czech Republic was lower than that of Poland, but in comparison to the Polish teams, the Czech teams on average had higher eligible costs.

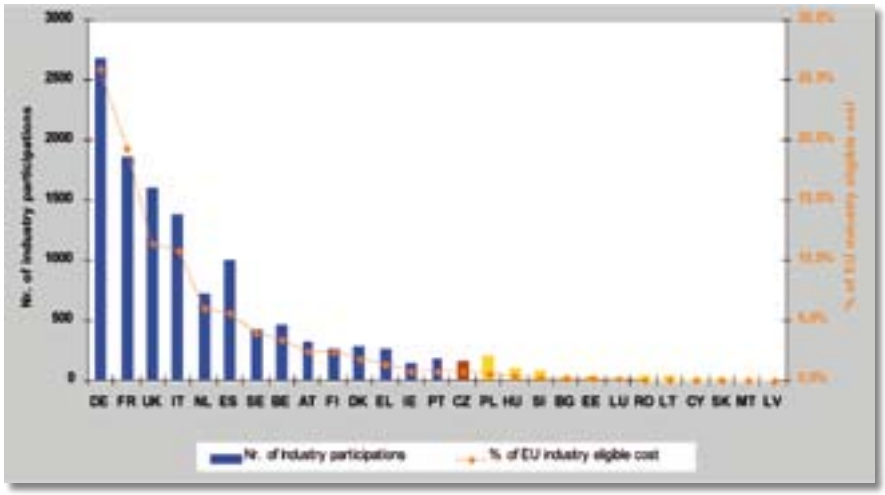

Figure 7 — bar chart: number of industry participations, first 15 EU Member States are given in blue, 12 newer EU Member States are in yellow. The countries are ranked according to the percentage of eligible costs of industrial teams of a given EU Member State from the total eligible costs invested by all industrial teams from the EU Member States.

Altogether 12 779 industrial teams from all the EU Member States participate in FP6 projects, of which 178 are industrial teams from the Czech Republic. The total eligible costs of industrial teams from the EU Member States amounts to EUR 5.6 billion, the total eligible costs of the Czech industrial teams equal approximately EUR 43.9 million. This amount represents roughly 34 % of eligible costs of all the industrial teams from the newer EU Member States. This share suggests that the Czech industry responds to the calls of the framework programme more actively when compared with the 'average response of industry of the newer EU Member States'.

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On the contrary, the eligible costs of industrial SMEs from the 12 newer EU Member States report double the amount of this value. Hence, the SMEs from the 12 newer EU Member States utilise rather more the possibilities offered by the framework programme than SMEs from the first 15 EU Member States. Note that the number of industry participations from the 12 newer EU Member States in the FP6-Euratom programme is only negligible.

The total eligible costs of Czech industrial teams can be deemed sufficient as long as they achieve approximately 0.8 % of the EU industry eligible cost, which corresponds approximately to the Czech contribution to the framework programme budget.

The Czech industry, similar to the European industry, had a very varied reaction to calls for proposals. Nevertheless, the thematic portfolio of eligible cost of the CZ industry differs from that of rest of the EU. The Czech aviation industry is the most successfully participating sector, taking advantage of the involvement in European projects. On the other hand, the small participation of the Czech industry in the life sciences sector is quite worrying, since it is extremely dynamic globally, notably in the production

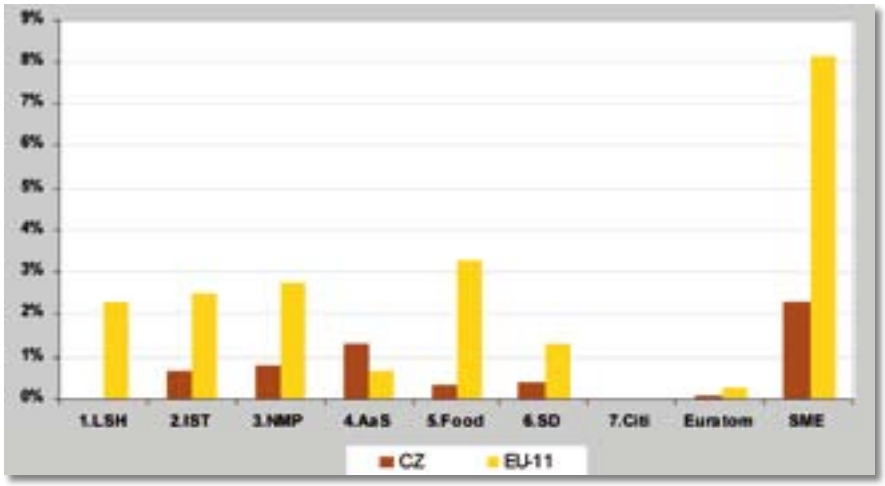


Figure 8 — total eligible costs of Czech industrial teams and the EU-11 industrial teams expressed as percentage of the EU's industry total eligible costs.

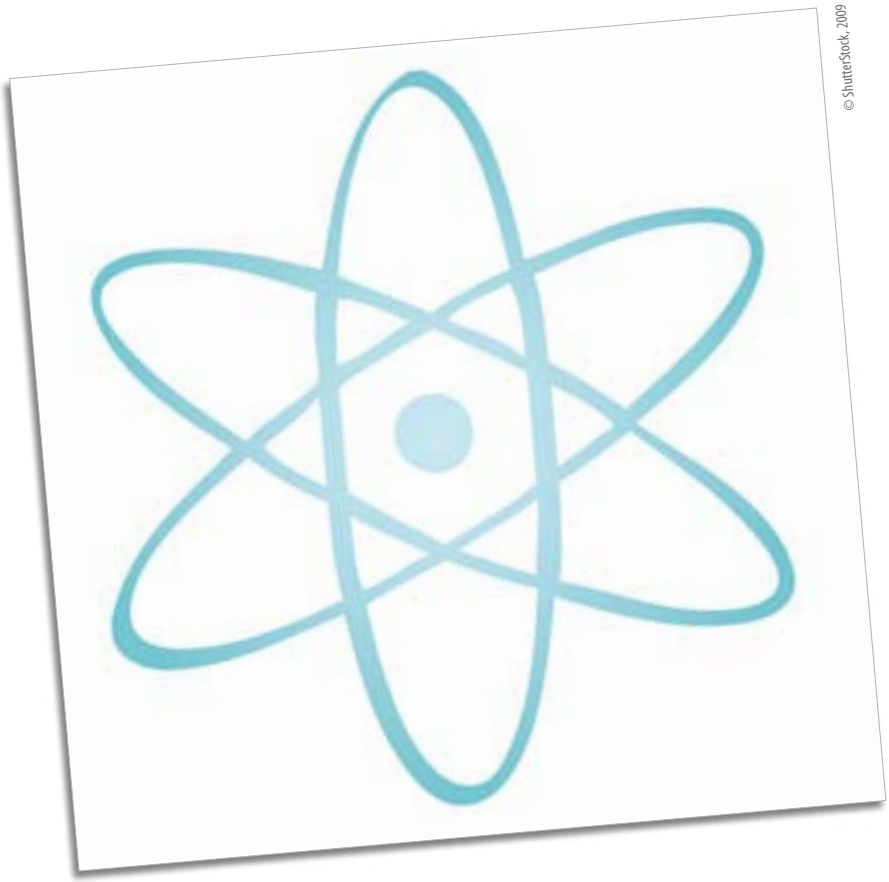
of new knowledge and the implementation of new technologies. Unfortunately a similar conclusion holds true for the participation of the Czech industry in the IST priority, to which the biggest portion of the framework programmes' budgets is allocated. The EU actually wants to further stimulate private-public partnerships (PPPs) in research financing in this sector.

CONCLUSIONS

The analysis of the Czech Republic's participation in FP6 and FP6-Euratom programmes revealed the following.

- The success rate of the Czech teams submitting project proposals under the framework programme was slightly lower than the success rate of their counterparts from the first 15 EU Member States. Due to a combination of several factors, the Czech Republic had only the same number of successful participants in FP6 projects per 1 million inhabitants as EU Member States which invest a considerably smaller percentage of their respective GDP in R & D. However, the share of Czech teams which participate in demanding integrated projects (IPs), NoE and specific projects of target-oriented research, i.e. projects aimed at achieving new knowledge, is almost the same as in the first 15 EU Member States, consequently considerably higher than in the other newer EU Member States.
- The Czech teams are not active in coordinating framework programme projects: the share of Czech coordinators among all participating countries was lower than in any other EU Member State.
- The Czech Republic has one of the most uneven participations in FP6 and FP6-Euratom of all.
- NUTS3 ('Nomenclature of territorial unites for statistics') regions: some three quarters of all Czech participants come from the capital city, Prague, and from the city of Brno, which have the highest concentration of academia teams. However, the analysis also indicated the importance of FP6 for SMEs and industry teams in regions with a smaller density of academia teams.
- Czech industry sectors reacted differently to FP6 calls for proposals. However, according to several relevant indicators, their reaction to the FP6 calls was clearly higher than in any other newer EU Member State. This holds good particularly for research in the field of aeronautics. Nevertheless, in life sciences, biotechnologies for health and in food research, the reaction of the Czech industry was poor. Similarly compared with the other newer EU Member States, the participation of Czech SMEs was quite high.
- The ratio global gross expenditure on R & D (GERD)/GDP clearly separates the first and newer EU Member States. When instead of the usual participation indicators the country participation is measured by financial indicators, eliminating the influence of the national economy's size (e.g. total country investment to FP6 projects per EUR 1 million of the national GERD or GDP), then Czech FP6 participation is ranked among the first 15 EU Member States with a higher GERD/GDP level. Hence the Czech Republic 'behaves like a state with rich national structures supporting the R & D activities'.
- The Czech reaction to opportunities offered in different thematic priorities was varied and the report deals with the individual priorities in detail. Unfortunately, the Czech reaction was poorer in priorities with a higher budget (e.g. LSH and IST) than in priorities only having a small budget (AaS, Euratom). Attempts were made to explain this phenomenon through the existence of a 'pivotal institution', which is able to influence behaviour of an entire sector. In thematic sectors with broadly dispersed participants, the success rate and support obtained from the FP6 resources is lower than in the fields with such a pivotal organisation.
- The participation in the FP6 projects brought high European added value to the Czech teams. More specifically, the Czech teams cooperated with top European institutions and globally significant teams in all thematic priorities. In total, 1 068 Czech teams cooperated with more than 14 000 teams in 876 projects under FP6. This scope of international cooperation is unique and has no parallel in the whole history of the Czech R & D system.

Technology Centre ASCR.



2TRAIN

The European railway sector is characterised by increasing advancements in technology and staff requirements. In order to achieve safe, competitive, and interoperable railways, particular attention to the qualification of train drivers is essential. To realise a consistent European level of drivers' competences, it is necessary to establish common training technology and common training contents as well as generally accepted assessment procedures.

Based on experiences made in the past, 2TRAIN aims to develop European standards for the training of train driver competences providing best-practice guidelines for an efficient, safety enhancing, and cost-effective use of the latest computer-based training technologies.

The starting point of 2TRAIN was a benchmarking of training technology, contents, and models already in use in Europe. To achieve harmonisation of today's diverse training technologies and to allow a standardised driver evaluation, a common data interface was developed and implemented into three simulator pilots (Spanish, German, French). In addition, a computer-based training (CBT) pilot was realised in the Czech Republic.

In a second step, common training simulation scenarios and CBT modules were developed, focusing on the training of crisis management competences and abilities to act in rarely occurring hazardous situations. The trainees' actual behaviour was compared with predefined target behaviour. The results were stored in an assessment database that was used as a base for the development of a virtual instructor and further add-on systems, e.g. standardised performance evaluation.

Two main procedures were completed during the 2TRAIN project: common training technology and content.

Analyses of the pilot simulation modules and the CBT module are currently being carried out. The results and recommendations will be published by 30 September 2009, when the 2TRAIN project concludes.

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Project title

Training of train drivers in safety relevant issues with validated and integrated computer-based technology

Project acronym

2TRAIN

Programme

FP6: 'Sustainable surface transport'

Project type

STREP

Project duration

36 months

EC contribution

EUR 2.2 milllion

Project coordination

Professor Dr Hans-Peter Krüger
Centre for Traffic Sciences,
University of Würzburg,
Germany

Czech partner

Tatiana Molková, Jan Perner Transport Institute, Pardubice
Jakub Pěchouček, ČD, a. s., Česká Třebová

Partner countries

5

Partner institutions

10

Project website

http://www.2train.eu

Project on CORDIS

You can access the factsheet of the project on the CORDIS website. Using the Advanced Search function, click on 'Projects', then enter the project acronym in the acronym field.

http://cordis.europa.eu

Athlet

Long-term scenarios for a sustainable global development suggest that it should be feasible by the middle of this century to provide over 80 % of the electric power by a mix of energy from renewable sources. Photovoltaics (PV) is one important option which can provide a significant share of over 30 % to such a mix.

Project title

Advanced thin film technologies for cost effective photovoltaics

Project acronym

Athlet

Programme

FP6: 'Sustainable energy systems'

Project type

IP

Project duration

48 months

EC contribution

EUR 11 million

Project coordination

Professor Martha Lux-Steiner, Hahn-Meitner-Institut Berlin, Germany

Czech partner

Dr Milan Vaněček, Institute of Physics, ASCR, v. v. i., Prague

Partner countries

11

Partner institutions

24

Project website

http://www.hmi.de/projects/athlet

Project on CORDIS

You can access the factsheet of the project on the CORDIS website. Using the Advanced Search function, click on 'Projects', then enter the project acronym in the acronym field.

http://cordis.europa.eu

According to the learning curve for cost reduction of PV, thin-film solar cells will play a major role. The APAS study, assigned by the European Commission, has shown that for large-capacity facilities (more than 60 MW/year per plant) the manufacturing costs for thin-film modules will become substantially lower, compared with crystalline silicon wafer modules.

This project focuses on the most promising material and device options for thin-film technologies, namely cadmium-free cells and modules, based on amorphous, micro- and polycrystalline silicon as well as on I-III-VI2-chalcopyrite compound semiconductors.

The overall goal is to provide the scientific and technological basis for an industrial mass production of cost-effective and highly efficient, environmentally sound, large-area thin-film solar cells and modules. By drawing on a broad basis of expertise, the entire range of module fabrication and supporting R & D will be covered: substrates, semiconductor and contact deposition, monolithic series interconnection, encapsulation, performance evaluation and applications.

The main objectives are:

- significantly reducing the cost/efficiency ratio: towards EUR 0.5 per watt produced in the long run;
- providing the know-how and the scientific basis for large-area PV modules by identifying and testing new materials and technologies with maximum cost reduction;
- developing the process know-how and the production technology as well as the design and fabrication of specialised equipment resulting in low costs and high yield in the production of large-area thin-film modules.

The Athlet project will end at the end of 2009. As it was already presented at the 23rd 'European photovoltaic solar energy conference and exhibition' in Valencia, Spain, from 1 to 5 September 2008, thin-film PV based on amorphous and microcrystalline silicon entered the mass production stage, with two of the world's largest PV equipment producers (Applied Materials and Oerlikon Solar) being part of the Athlet consortium. This fulfils one of the goals of the project — moving from a scientific basis (it already started in the FP5 DOIT project, where the Athlet consortium also participated) to industrial mass production.

The Institute of Physics from the ASCR, v. v. i., has a long tradition in basic research on amorphous and microcrystalline semiconductors. In fact, it organised the 1st (1965) and the 12th (1987) 'International conference on amorphous semiconductors' in Prague.

Besecu

The Besecu project investigates cross cultural and ethnic differences in human behaviour in extreme situations in order to better adapt communication, instructions and procedures related to security, and thus improve the evacuation and protection of the population. The aim of the project is to find similarities and differences between individual, cultural and ethnic groups while taking socio economic factors into consideration.

The result will be a triangulation of findings acquired through objective monitoring, subjective experiences and behaviour observation. All eight of the project's partners will participate in research, including end-users (such as faculties of safety engineering or fire protection schools). The data acquired through the project will be utilised by branches of the emergency system, architects and builders, as well as persons responsible for setting up safety procedures in buildings.

The Besecu project will offer two types of research findings and products:

- data that will allow builders and safety engineers to develop culturally adapted safety measures;
- data regarding inter-individual differences that will help to improve communication in extreme events.

The project includes a cross-cultural survey of individual experiences among people who have experienced evacuations, flat fires or other emergency events, either as victims or as the workers who dealt with these situations as parts of the rescue services or the government. This retrospective study will be carried out in all seven countries of the project consortium, i.e. in countries with differing cultures. The second level of the project will include experiments simulating evacuation scenarios in a standard environment, including objective observation (e.g. reaction times) and analyses of video recordings.

In-depth interviews with members of rescue services, the operating personnel and key representatives of communities and intervening organisations take place during the first year of the project. Focus groups are also being established with victims of selected types of emergency events, including both the majority population as well as cultural and ethnic minorities. Evacuation experiments in two countries are in a preparation phase. Life-threatening flat fires are a jointly investigated type of emergency event. Individual project partners investigate other specific types of emergency events. The Prague Psychiatric Center chose floods.

At this stage, it is cooperating with and interviewing staff members from the fire department of the Czech Republic, Adra Foundation, emergency medical services, the police of the Czech Republic, Blansko Charity, Brno Municipal Authority, and others. Cooperation with the Technical University of Ostrava's (VSB) Faculty of Safety Engineering is also important. The project consortium is very grateful for the voluntary cooperation of individual citizens who share their traumatic experiences in dealing with extreme events.

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Project title

Human behaviour in crisis situations: a cross cultural investigation in order to tailor security-related communication

Project acronym

Besecu

Programme

FP7: Security

Project type

CP

Project duration

36 months

EC contribution

EUR 2.09 milllion

Project coordination

Dr Silke Schmidt, Ernst Moritz Arndt Universität Greifswald, Germany

Czech partner

Dr Marek Preiss, Prague Psychiatric Center

Partner countries

7

Partner institutions

8

Project website

http://www.besecu.de

Project on CORDIS

You can access the factsheet of the project on the CORDIS website. Using the Advanced Search function, click on 'Projects', then enter the project acronym in the acronym field.

http://cordis.europa.eu

BRITA in PUBS

The FP6 project 'BRITA in PUBS' propagated innovative solutions for the reconstruction of buildings, with the aim to decrease power consumption and utilise renewable energy resources. With this goal in mind, energy reconstruction of eight public buildings in different parts of Europe was performed.

Energy consumption data suggests that European buildings built before 1980 consume over 90 % of energy used for heating, ventilation, air conditioning, heating of warm water and lighting. Therefore, the main energy conservation potential is not in increasing requirements for newly built buildings, but in reducing consumption in existing buildings through energy reconstructions.

Buildings with general public accessibility financed from public funds are the most suitable for demonstrations of measures designed for economical use of energy. The reconstructed buildings include three university buildings (Czech Republic, Lithuania, United Kingdom), a social centre (Norway), a multifunction hall (Denmark), a church (Norway), a library (Greece) and a day care facility (Germany).

A reconstruction of a campus building at the Faculty of Information Technology at Brno University of Technology, Czech Republic, was supported as a part of the 'BRITA in PUBS' project. The building which was — according to an inscription on one of its stones — built in 1769 and used to be a brewery, has been changed during the reconstruction to a modern cultural and social centre. The original purpose of the building was preserved in the name of the social centre, which is now *Starý pivovar* (old brewery).

Energy conservation measures included both standard approaches in the form of additional heat insulation of the building's external cladding and a number of innovative solutions, such as the utilisation of data from the access system to control ventilation, heating and air conditioning, or the integration of a photovoltaic (PV) system into the building. PV systems integrated into claddings or roofs of buildings compensate for the consumption of electrical energy, to which buildings contribute significantly.

Last but not least, the 'BRITA in PUBS' project produced some other interesting outputs. Amongst these were manuals which aimed at energy reconstructions for designers, investors and building owners, pointing out the use of simulation tools, innovative heat insulating materials and renewable sources of energy. A web application was developed to evaluate energy intensity of buildings. Training courses on energy conservation in building management were organised, and students of architecture and construction engineering could benefit from courses based on the experience gained from the energy reconstructions in the demonstration properties.

© BRITA in PUBS, 2009

Project title

Bringing retrofit innovation to application in public buildings

Project acronym

BRITA in PUBS

Programme

FP6: 'Sustainable energy systems'

Project type

IP

Project duration

48 months

EC contribution

EUR 3.5 million

Project coordinator

Ing. Hans Erhorn, Fraunhofer Institute of Building Physics, Munich, Germany

Czech partner

Professor Miroslav Jícha,
Dr Pavel Charvát,
Brno University of Technology

Partner countries

9

Partner institutions

23

Project website

http://www.brita-in-pubs.eu

Project on CORDIS

You can access the factsheet of the project on the CORDIS website. Using the Advanced Search function, click on 'Projects', then enter the project acronym in the acronym field.

http://cordis.europa.eu

Carboeurope

The IP Carboeurope was focused on identifying the mechanism of current carbon balance of European terrestrial ecosystems. Special attention was devoted to the identification of uncertainty of carbon balance at local, regional and continental scale.

The basic approach of the project is the estimation of carbon deposition in different European ecosystems, the understanding of the control mechanism of carbon exchange between the atmosphere and terrestrial ecosystems, and the identification of this relation to changes in landscape use. The project's methodology was focused on the construction of a European database of carbon exchange and the development and standardisation of interment tools used for carbon balance estimation.

Globally, the land biosphere (excluding the part subject to deforestation) takes up 30 % of the fossil fuel emissions and thus is presently reducing the speed of anthropogenic climate change. Yet our understanding of this carbon sink, which is mainly located north of the tropics, its partitioning between Europe, North America and Asia, its controlling mechanisms and its vulnerability to changes in climate and land management are still uncertain.

In order to achieve the basic goals, the project addresses the three major topics.

- Determination of the carbon balance of the European continent, its geographical patterns, and changes over time. This is achieved by a) executing a strategically focussed set of surface based ecological measurements of carbon pools and CO_2 exchange, b) further enhancement of an atmospheric high precision observation system for CO_2 and other trace gases, c) integration of these components by means of innovative data assimilation systems, bottom-up process modelling and top-down inverse modelling.
- Enhanced understanding of the controlling mechanisms of carbon cycling in European ecosystems, and the impact of climate change and variability, and changing land management on the European carbon balance. This is achieved by a) the partitioning of carbon fluxes into their constituent parts (assimilation, respiration, fossil fuel burning), at local, regional and continental scales, b) the quantification of the effects of management on net ecosystem carbon exchange based on data synthesis, and c) the development, evaluation and optimisation of ecosystem process models.
- Design and development of an observation system to detect changes of carbon stocks and carbon fluxes related to the European commitments under the Kyoto Protocol. This is achieved by a) atmospheric measurements and a modelling framework to detect changes in atmospheric CO_2 concentrations during the time frame of a Kyoto commitment period, and b) the outline of a carbon accounting system for the second commitment period based on measuring carbon fluxes, stock changes by soil and biomass inventories, vegetation properties by remote sensing, and atmospheric concentrations.

Carboeurope concentrated 67 contractors from 17 European countries. The project can be regarded as the base for the international interdisciplinary scientific community focusing on ecosystem studies and modelling. Thus, the project is a unique opportunity to harmonise different approaches (spatial and temporal). Its budget consists of EUR 16.3 million from FP6 and about EUR 30 million from national funding sources.

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Project title

Assessment of the European terrestrial carbon balance

Project acronym

Carboeurope

Programme

FP6: 'Global change and ecosystems'

Project type

IP

Project duration

60 months

EC contribution

EUR 16.31 million

Project coordination

Max-Planck-Institute for Biogeochemistry, Germany

Czech partner

Institute of Systems Biology and Ecology of the Academy of Sciences of the Czech Republic, v.v.i

Partner countries

17

Partner institutions

67

Project website

http://www.carboeurope.org

Project on CORDIS

You can access the factsheet of the project on the CORDIS website. Using the Advanced Search function, click on 'Projects', then enter the project acronym in the acronym field.

http://cordis.europa.eu

Cascadoss

The main objective of the Cascadoss project is to encourage geospatial end-users in using open source software (OSS). The target group is formed of the current and potential users of global monitoring for environment and security (GMES) services, especially from the newer EU Member States.

The scope of the project was to carry out research and analysis of available OSS for the field of geographic information systems (GIS) and remote sensing (RS). On the basis of this analysis, regional educational seminars were to be prepared.

OSS are computer programs with a freely available source code, characterised by freedom in usage, modification and further distribution. Free and open source software for geomatics (FOSS4G) are OSS aimed at the field of geo-informatics.

Currently, FOSS4G are becoming more significant in terms of their functionality, the size of their community as well as the number of applications — despite of the fact that many geospatial end-users still treat OSS with mistrust, which stems from a lack of information. Therefore the potential of many geospatial OSS projects is left unexploited. The objective of the analysis carried out in the scope of this project was to provide the users with sufficient information regarding software solutions, licensing, business models and applications based on these OSS. All information was eventually carried over to the national level.

The project realisation was divided into three phases.

- In the first phase, an extensive study of FOSS4G projects was carried out. The result of the evaluation is a detailed documentation of the best programs and their utilisation in the analysis and modelling of environmental issues. Furthermore, various types of business models for the support of OSS technologies for GIS/RS were explored and documented. A part of the first phase was also a review of the licensing policy and legal issues regarding the OSS.
- In the second phase of the project, a one-day international symposium was organised, together with a three-day information seminar (in Warsaw, Poland, from 16 to 19 June 2008). The symposium and the seminar were dedicated to GIS/RS experts, geospatial OSS experts and GMES services users. The results attained in the first part of the project were discussed here.
- The aim of the third phase was to organise regional seminars (between autumn 2008 and spring 2009) in the national languages. Three seminars were held in the Czech Republic (Prague) and Slovakia (Košice, Bratislava). The participants familiarised themselves with the possibilities of using open source programs for working with spatial data. Participants were also introduced to the most successful desktop applications GRASS, gvSIG and the GDAL/OGR library.

Cascadoss was aimed mainly at users from central and eastern Europe. The adoption of geospatial OSS in those countries is a topic of particular interest, because it will reduce licensing costs and promote indigenous technological development.

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Project title

Development of a trans-national cascade programme on open source GIS and RS software for environmental applications

Project acronym

Cascadoss

Programme

FP6: 'Aviation and aerospace research'

Project type

SSA

Project duration

24 months

EC contribution

EUR 600 000

Project coordination

Thérèse Steenberghen, Katholieke Universiteit Leuven, Spatial Application Division (KUL-SADL), Belgium

Czech partner

Erika Orlitova, GISAT s.r.o., Prague

Partner countries

4

Partner institutions

4

Project website

http://www.cascadoss.eu

Project on CORDIS

You can access the factsheet of the project on the CORDIS website.
Using the Advanced Search function, click on 'Projects', then enter the project acronym in the acronym field.

http://cordis.europa.eu

Cecilia

Global climate models (GCMs) can, quite satisfactorily, reproduce basic climate characteristics on a global or continental scale. But their precision, and consequently their information quality, are severely limited when shifting to a regional or local scale which is very important for a qualified assessment of climate change.

The coarse resolution of GCMs constitutes a problem mainly for ground-level characteristics, especially for parameters depending on a complicated combination of physical processes, such as the precipitation or extremes of climate quantities. The advantage of GCMs is that they offer a tool for attractive research on climate change, being in high demand over the world. This entails a possibility for broad international cooperation (e.g. within the Intergovernmental Panel on Climate Change, IPCC), providing a whole set of GCM results and allowing certain probability assessments.

To achieve a regional or local scale, the so-called 'downscaling methods' are applied. Besides statistical downscaling, the so-called 'dynamical downscaling' is being used today. It utilises a technique analogous to the method commonly used in numerical forecasting methods, i.e. merging a higher-resolution limited area model within a lower-resolution global model. This approach of using regional climate models (RCMs) appears to be more appropriate because it better represents physical processes, even though it requires more computing resources.

In connection with the ever-growing possibilities of computational resources, there are attempts to achieve RCMs with a very high resolution of up to 10 km. This work is mainly oriented at selected areas of interest, especially those related to human activities (e.g. water management, agriculture, forestry, energy, transport, tourism).

First results from areas with complicated orography indicate that a more realistic high-resolution description of the terrain may contribute to a more precise climate description for a given region. The need for high resolution RCMs is particularly evident in areas with complicated topography (e.g. central Europe, Carpathian Mountains, Scandinavia).

This is the method chosen by the Cecilia project. Its main task is to analyse the impact of climate change on selected sectors of the economy (agriculture, forestry, water, air quality) in the central and eastern European region, based on RCM results. Apart from using results of past projects (e.g. Prudence, Ensembles, IPCC GCM), emphasis is placed on own realisations of RCMs with 10 km resolution in the areas of interest.

The project partners use either the Aladin weather prediction model or the RegCM model, according to their experiences. The control period is 1961–90/2000, climate change projections are simulated for the future periods 2021–50 and 2071–2100 (except for air quality, which is only investigated for the last decade of the analysed periods).

So far, the results collected by the project show that higher resolution can indeed help to achieve more precise simulation results. At the same time, it is clear that RCMs cannot alleviate uncertainties stemming from the different results of global climate projections.

Project title

Central and eastern Europe climate change impact and vulnerability assessment

Project acronym

Cecilia

Programme

FP6: 'Global change and ecosystems'

Project type

STREP

Project duration

43 months

EC contribution

EUR 2.75 million

Project coordination

Dr Tomáš Halenka, Charles University, Prague

Partner countries

12

Partner institutions

16

Project website

http://www.cecilia-eu.org

Project on CORDIS

You can access the factsheet of the project on the CORDIS website. Using the Advanced Search function, click on 'Projects', then enter the project acronym in the acronym field.

http://cordis.europa.eu

CESAR

In 2006, the Association of the Aviation Manufacturers of the Czech Republic (ALV) initiated preparations for an extensive international project concentrated on the needs of the aviation industry in the area of small regional aircraft. A major role was played by the ALV President, Dr Milan Holl, whose active approach succeeded in preparing conditions for the project.

Project title

Cost-effective small aircraft

Project acronym

CESAR

Programme

FP6: 'Aeronautics and space'

Project type

IP

Project duration

42 months

EC contribution

EUR 18.1 million

Project coordination

Dr Karel Paiger, Aeronautical Research and Test Institute (VZLU), Prague

Partner countries

14

Partner institutions

39

Project website

http://www.cesar-project.eu

Project on CORDIS

You can access the factsheet of the project on the CORDIS website. Using the Advanced Search function, click on 'Projects', then enter the project acronym in the acronym field.

http://cordis.europa.eu

Most of the coordination activities during the preparation phase were performed by the Professional Contact Organization for Materials and Technologies in the Czech Republic (PCO). Aviation and space research was conducted at the Aeronautical Research and Test Institute (VZLU). The project proposal was prepared by an international team led by Dr Karel Paiger from the VZLU.

The CESAR project is planned to last three and a half years with an overall budget of almost EUR 34 million. Thirty-nine organisations from 14 European countries participate in the project. Eleven organisations from the Czech Republic take part, with one of them, the VZLU, being the project coordinator.

The project concentrates on the area of small transport aircraft for 5 to 15 passengers; it is a segment of the so-called 'general aviation'. R & D activities focus on the development process of aircrafts in this category, with the aim to lower development costs by 20 % and shorten the time-to-market from the average six to four years.

The technical aspect of the project is aimed at improving development tools in the area of aerodynamics and aircraft construction. The project is also concerned with selected aircraft systems that have a major influence on lowering operational costs and improving passenger transport safety. It is primarily concerned with R & D of technologies for a new turbo-propeller unit, utilisation of advanced electro-hydraulic and electro-mechanical actuators in mechanical systems of small aircraft, development of a reliable air system for aircraft cabins, and the introduction of a modern predictive state-based diagnostic which significantly improves the process of aircraft maintenance.

CESAR is, to a certain point, a unique project. It is the first time in the history of the framework programmes for research that a topic concerning small aircraft has been opened to financing, and the first time that an IP of this scope is led by an organisation from a newer EU Member State. The CESAR project will be concluded in February 2010, and it is already clear that it will be followed by other similar projects.

In January 2008, the European Commission approved a special agenda with a full recognition of general aviation as an important branch of industry that contributes significantly to employment, professional knowledge, technological innovation and economic revenues of the EU, including export. The Commission proposed to integrate general and business aviation into the overall transport policy of the EU. This is a very positive message for the Czech Republic, as general aviation has traditionally been a segment favoured by the Czech aviation industry.

Chobotix

The idea of chemical robots so tiny that they could carry a curative substance directly into a tumorous cell, diagnose serious illnesses, remove dental scale or clean contaminated environment may seem nothing but fantasy. Dr František Štěpánek from the Institute of Chemical Technology (ICT), Prague, is however absolutely sure of the success of his research.

The goal of the Chobotix project is to develop so-called 'chemical robots': artificially manufactured particles, sized between tens and hundreds of micrometers, able to move independently in a given environment, carry or absorb different substances. When looking for a project name, Dr Štěpánek found inspiration in the film *Matrix*, in which 'swarms' of mechanical robots attacking human spaceships were all programmed for the same mission (in this case to destroy men). The mission of the Chobotix miniature chemical robots would be the exact opposite: to protect humans.

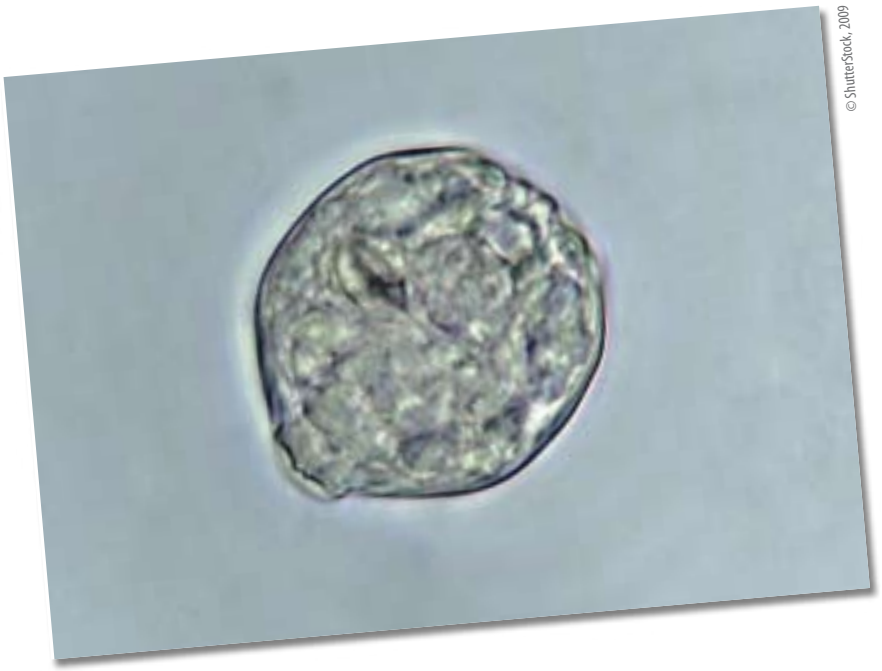
Dr Štěpánek thought it was not possible to miniaturise robots based on electromechanical principles indefinitely because they stopped being practical to use when they reached millimetre sizes. He came to the conclusion that this was where chemistry based on interactions between molecules or supramolecular structures should come in.

The model for chemical robots is a unicellular organism. Chobotix aims to create particles with similar qualities as unicellular organisms, i.e. the ability to move independently in a certain environment, selectively absorb or exude certain molecules, and react to surroundings. Chemical robots will not be remotely controlled models. Their movement could be based on chemotaxis: when they locally discover a supraliminal value or a concentration of a selected signal molecule, they would react by, for example, opening their 'pores' and secreting an active component. If the task was to eliminate a source of contamination, randomly scattered chemical robots would converge to the source and then neutralise it on a molecular level.

There are many possibilities for the use of chemical robots. The first area is the controlled discharge of medicinal drugs or generally active substances that need to be delivered to a certain place in a living organism, be it a human body or a plant. The second area is the controlled absorption of substances already dispersed in an environment, such as contaminants or other undesired substances. The third area of use is distributed diagnostics. Chemical robots could collect data and measure physical quantities that are not precisely localised, such as concentration or temperature.

In short, chemical robots can take part in removing tooth decay, as well as repairing a corroded printed circuit, or in precise application of fertilisers or chemical spray. For example, it would be possible to use agrochemicals in higher and more effective concentrations without polluting the surrounding environment.

To achieve his main research objective, there are still many obstacles to overcome. But Dr Štěpánek is optimistic: 'I don't think it unreal to expect a widespread application of chemical robots in our lifetime,' he predicts.



Project title

Chemical processing by swarm robotics

Project acronym

Chobotix

Programme

FP7: Ideas

Project type

Support for frontier research from the European Research Council (ERC), ERC Starting Grant

Project duration

60 months

EC contribution

EUR 1.644 million

Project coordination

Dr František Štěpánek, Institute of Chemical Technology (ICT), Prague

Project website

http://www.vscht.cz/chobotix

Project on CORDIS

You can access the factsheet of the project on the CORDIS website. Using the Advanced Search function, click on 'Projects', then enter the project acronym in the acronym field.

http://cordis.europa.eu

For further information about the ERC funding received by Dr Štěpánek, please read page 20 of issue No 3 of the *research*eu focus* supplement on the ERC.

Compass

The research of thermonuclear fusion is one of the fields in which the EU occupies the top spot in the world. The field is coordinated and financially supported by Euratom on a long-term basis. During the past 30 years, intensive European research has succeeded, among others, in significantly improving the tokamak: a device which holds hot, fully ionised gas/plasma with the help of a strong magnetic field, in conditions close to controlling thermonuclear fusion.

Project title

Compass to Prague

Project acronym

Compass

Programme

FP Euratom: 'Fusion energy'

Czech partner

Institute of Plasma Physics (IPP), Academy of Science of the Czech Republic, v. v. i., Prague

EC contribution

EUR 1.8 million

The Institute of Plasma Physics (IPP) of the ASCR has successfully worked on plasma research for decades. Association agreements with Euratom were signed in 1999. Following the accession of the Czech Republic to the EU, the country was the only newer EU Member State to operate its own experimental tokamak.

From the point of view of top scientific research, the capacity of the small Prague tokamak, Castor, that had been in operation for a quarter of a century, was practically exhausted. A new operator was being looked for within Euratom for the considerably more modern 'Compass assembly' (Compass) device that had been used in Culham, United Kingdom, until that time. The scientific potential of the Compass tokamak had not been exhausted by far.

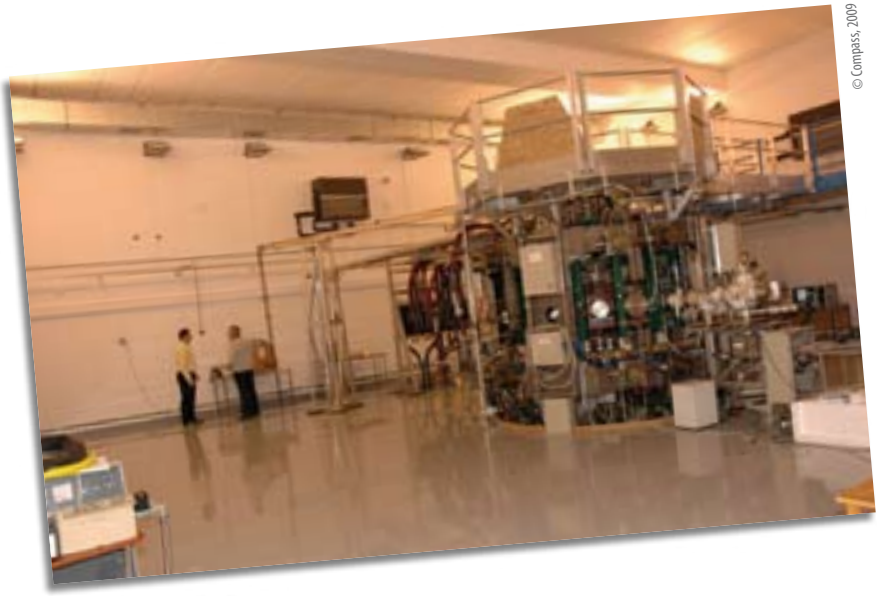
The IPP was very interested in taking over Compass, but it had to prove that it fulfilled the requirements to operate it: 'We had to gain the support of the ASCR administration, financial support from the Czech Government, and a sufficient number of both young and senior professionals with the necessary enthusiasm for this project,' remembers the IPP Director, Professor Pavel Chráska.

Everything went well in the end. The Compass tokamak arrived in Prague on 20 October 2007. Two flywheel generators were installed, a brand new heating system utilising beams of neutral atoms is being prepared, and a state-of-the-art fully digital control and data acquisition system is being introduced. All key diagnostic systems will also be new. Overall, approximately EUR 15 million were requested for the pledge to operate the Compass tokamak.

Other European laboratories associated in the Euratom programme are interested in the realisation of this project. It is expected that the Compass tokamak will eventually become a regional centre for top research, education and training of new experts. Two Czech universities in Prague, members of the Euratom-IPP, have already expressed their interest. So has the European consortium Fusenet, which received grants from Euratom to support a wide European co-operation on fusion education.

The main research programme goals for the next few years are linked to experiences from the Castor tokamak. The scientists will focus on detailed understanding of the physical processes that control the events on the edge of plasma, while utilising top diagnostic methods with high-time and space resolutions. Options for reducing plasma instabilities occurring in this area will also be tested. Both of these research areas are very important for the future operation of ITER.

IPP researchers believe that this scientific programme will stimulate scientific co-operation between the Czech Republic and Europe, and attract a young generation of Czech and foreign physicists to fusion research.



Ecodis

The goals of the Ecodis project were focused on the development of sensor technologies for monitoring the physicochemical reactivity and the biological impact of inorganic and organic pollutant species in aquatic systems. Ecodis also applies these technologies to the study of the short and long-term chemical and biological status of aquatic ecosystems following a pollution disaster.

The dynamic features of pollutant species distributions over biotic and abiotic components are basic components of a new generic dynamic approach for any macroscopic aquatic ecosystem affected by a pollution disaster event. This involves the integration of the dynamic features of pollutants with their macroscale transport resulting from diffusion and flows in a water body.

One of the major goals of the Ecodis project was to arrive at a model that includes predicted pollutant species' distributions, as well as ensuing biological risks, in all compartments of the aquatic ecosystem as a function of time and space. Especially in disaster situations, the pollutant sink/source functioning of ecosystems under extreme load forms a key factor in the rate at which the disaster impact is spread.

Dynamic sensor technologies are being developed and dedicated to analysis of metal and organic pollutant species under disaster conditions. Fundamental knowledge on the functioning of a suite of sensors is being extended to strengthen the quantitative link between sensor signals, speciation in the medium and appropriate biological parameters (e.g. biouptake, toxicity).

More directly, the Ecodis results will be used by crisis managers on site at pollution disasters, both in order to direct actions in the immediate wake of the event and to develop optimal responses based on their predicted spread and ecological impact. The scientific knowledge generated by this project contributes to furthering the multidisciplinary understanding of ecosystem functioning and response to pollutants.

Project title

Dynamic sensing of chemical pollution disasters and predictive modelling of their spread and ecological impact

Project acronym

Ecodis

Programme

FP6: 'Global change and ecosystems'

Project type

STREP

Project duration

36 months

EC contribution

EUR 3.5 million

Project coordination

Professor Herman P. van Leeuwen, Wageningen University, Netherlands

Czech partner

Professor Ivan Holoubek, Recetox Masaryk University, Brno

Partner countries

7

Partner institutions

9

Project website

http://www.fenk.wau.nl/ecodis

Project on CORDIS

You can access the factsheet of the project on the CORDIS website. Using the Advanced Search function, click on 'Projects', then enter the project acronym in the acronym field.

http://cordis.europa.eu

Extremat

Extremat aims to create new multifunctional materials that are beyond the reach of conventional incremental materials' development. By using an integrated approach, it intends to push forward the limits in materials' technology and provide new knowledge-based materials and compounds for application in extreme environments.

'Extreme environments' can be characterised as situations where a complex combination of different loads acts simultaneously on a single material or component:

- thermal loads (e.g. high temperatures, high heat fluxes, thermal cycles);
- physicochemical attacks by aggressive media (e.g. oxygen and hydrogen radicals);
- complex mechanical loads (e.g. from vibrations, aerodynamic forces, friction, thermally induced strain);
- radiation (e.g. highly energetic alpha, beta, gamma or neutron irradiation).

Materials' research in Extremat focuses on four main aspects:

- self-passivating protection materials;
- heat sink materials;
- radiation-resistant materials;
- compound technologies (joining, interlayers, coatings).

Respective sub-projects defined user requirements by analysing applications in various fields: electronic, space applications, fusion and fission reactors and various spin-off applications. The corresponding materials' requirement specifications were then deduced, serving as starting points for targeted materials' development.

The following materials were identified as the most promising candidates:

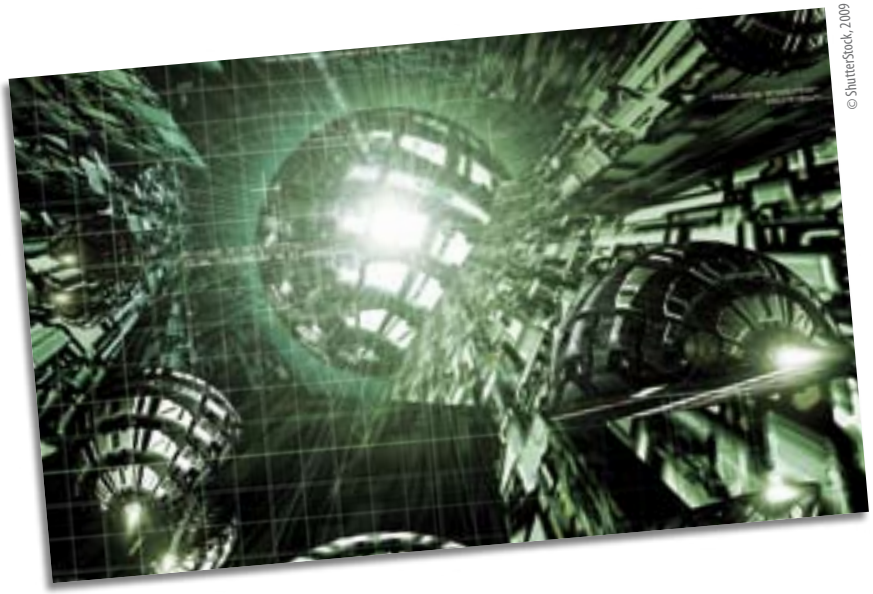
- carbon and silicon carbide-based composites with further passivating constituents;
- refractory alloys and nanostructured metallic materials;
- ceramic/metal-matrix composites;
- functional coatings and films (e.g. as interfaces and diffusion barriers).

These materials were subjected to full-scale R & D activities, screening and evaluation of results. The most promising concepts entered the industrialisation phase.

The Czech Institute of Plasma Physics (IPP) participated in the development of plasma-facing materials and compounds for fusion applications. The materials' requirements are rather complex: on the plasma-facing side, they will be exposed to high-temperature plasma and therefore have to be resistant to high heat, particle fluxes and thermal shocks; the opposite side, joined to the cooling system, will have to remove significant amount of heat and thus needs to possess high thermal conductivity.

Tungsten and copper have previously been selected as the prime candidate materials for these parts, respectively. However, sharp interface between two dissimilar materials would lead to high stress concentration upon loading, which is why a transient layer with gradually changing composition can be advantageous. At IPP, plasma spraying is pursued as prospective fabrication technology, using the unique water-stabilised plasma torch.

Plasma-sprayed coatings of tungsten, copper and their composites, including graded layers, were developed. After several stages of process optimisation and post-treatment methods, mock-ups were produced for high-heat flux testing. Their performance proved adequate for potential application on the first wall of a fusion reactor. Some of the processing and testing was done in fruitful collaboration with partner institutions throughout Europe.



Project title

New materials for extreme environments

Project acronym

Extremat

Programme

FP6: 'Nanotechnologies and nanosciences, knowledge-based multifunctional materials and new production processes and devices'

Project type

IP

Project duration

60 months

EC contribution

EUR 17.4 million

Project coordination

Dr Christian Linsmeier, Max Planck Institute of Plasma Physics, Garching, Germany

Czech partner

Dr Jiří Matějíček, Institute of Plasma Physics (IPP), ASCR, v. v. i., Prague

Partner countries

12

Partner institutions

37

Project website

http://www.extremat.org

Project on CORDIS

You can access the factsheet of the project on the CORDIS website. Using the Advanced Search function, click on 'Projects', then enter the project acronym in the acronym field.

http://cordis.europa.eu

Freightwise

The Freightwise project's subject of investigation is the support of a freight transport shift towards multimodal transport. The project offers to improve the telematic support, which should make non-road modes of transport more attractive.

The project aims to link information flows between the following sectors:

- transport control (carriers, forwarders, operators, etc.);
- transport traffic control and infrastructure control (railways, roads, short-distance sea navigations, river transport);
- administration (customs, border crossings, dangerous loads, safety, etc.).

The project endeavours to achieve better quality control and an easier access to information and exchange thereof. Project co-investigators have developed a reference model for freight transport common to all modes of transport.

Defining the roles of participants in the transport chain in individual interactions was at the centre of attention, as well as the effort to achieve the highest efficacy in information exchange. A role represents a set of responsibilities and is considered independently of the transport mode, form of management, technologies or legal aspects of a particular chain participant.

Interactions between roles were described by the process model for freight transport. The model covers phases prior to, during and after the end of transport. Thus, information flows between different roles were mapped in time. Freightwise has provided a complex definition of the supply and demand for information (including prioritisation) for data flows between the roles, and adapted them into the form of six information packages that follow from the aforementioned process model.

Following testing and fine-tuning in particular use-cases, both the process model and the information packages will be submitted for approval as standards. This is important for subsequent use outside of the project, as intended from the start.

There is a plan to set up a publicly accessible web repository of information packages to be filled out, along with extensive tools and services, including checks of filled information packages, before the end of the project (2010). This will also be a subject of investigation in pilot cases which will make use of the project.

Besides interoperability between participants in the transport chain and related services, the use of these standards will lower financial costs of intermodal transport. This will make Freightwise more available to potential customers such as service providers, including SMEs.

Freightwise is closely related to two recent activities of the European Commission:

- the 'Freight transport logistics action plan' (2007);
- the 'Intelligent transport systems action plan' (2008).

The project's goals can be classed within the concept of 'e-freight': a vision of a paperless, electronic information flow along the physical flow of goods in freight transport.

The Freightwise findings and experiences will be submitted to the Commission, Directorate-General for Energy and Transport, in support of the creation of a European transport policy and European standardisation activities.

Project title

Management framework for intelligent intermodal transport

Project acronym

Freightwise

Programme

FP6: 'Sustainable surface transport'

Project type

IP

Project duration

42 months

EC contribution

EUR 7.9 million

Project coordination

British Maritime Technology (BMT), Teddington, United Kingdom

Czech partner

Dr Eva Gelová, Transport Research Center (CDV), Brno

Partner countries

14

Partner institutions

55

Project website

http://www.freightwise.info

Project on CORDIS

You can access the factsheet of the project on the CORDIS website. Using the Advanced Search function, click on 'Projects', then enter the project acronym in the acronym field.

http://cordis.europa.eu

Health plus

The aim of the 'Health plus' project was to design, develop and validate the system that will bring support to health experts and nutriologists in their efforts to improve the life quality of Europe citizens. The project stressed the necessity of efficient therapeutic decision-making on weight control and lifestyle.

Project title

Improving knowledge and decision support for healthy lifestyles

Project acronym

Health plus

Programme

FP6: IST

Project type

STREP

Project duration

30 months

EC contribution

EUR 2.2 million

Project coordination

Milena Hrbáčková, IDS Scheer CR, s.r.o., Brno

Partner countries

7

Partner institutions

10

Project website

http://www.health-plus.eu

Project on CORDIS

You can access the factsheet of the project on the CORDIS website. Using the Advanced Search function, click on 'Projects', then enter the project acronym in the acronym field.

http://cordis.europa.eu

Overweight and obesity are increasing at an alarming rate in Europe and have become a major public health problem. Including the newer EU Member States, over 200 million EU citizens are affected. All EU Member States face a growing need for a more effective therapeutic management of weight control and healthy lifestyle, aimed at the reduction of overweight and obesity and their most significant consequences on health. The latter include hypertension, cardiovascular disease, type 2 diabetes, gall-bladder disease, certain types of cancer and psychosocial problems.

'Health plus' intended to provide active support to healthcare and nutritional experts involved in weight control, lifestyle management and prevention initiatives. The project partners set up an integrated knowledge management platform, assisting health professionals to analyse the modern environment — which indirectly favours obesity diffusion — as well as offering certified and localised scientific information on food composition and lifestyle management.

The system will support the examination of the patient's clinical profile and will match clinical data with nutritional and lifestyle habits. It will support healthcare and nutritional professionals in producing tailored nutritional plans and providing specialised counselling for efficient weight control.

The solutions cover four scenarios, designed and supported by the project's pilot partners:

- operative — supporting doctors with their treatment of obese patients and definition of individual nutrition support;
- scientific — defining and implementing surveys of nutrition inputs and their current trends in a given field;
- knowledge — supporting scientists and nutrition experts with providing, saving and sharing information on nutrition topics;
- promotional — offering an information collection on lifestyle and nutrition topics and an analysis of personal nutritional behaviour to a wide public.

Partners of the project consortium included development and consulting companies in the field of information technologies from Greece, Italy, Hungary, Malta and Austria. The project was also based on the strong academic background provided by three prestigious universities from the Czech Republic, Italy and Poland, engaged in strategies related to nutrition and weight control for people of different age groups.

Pilot users have already expressed their full satisfaction with the conception and implemented functionalities of the 'Health plus' system.

Indect

The aim of the Indect project is to prepare a pan-European platform for the safety of the population and to neutralise possible threats in urban environments. The project result will be made available for use in the decision-making process on various levels of state administration.

The project covers many types of threats that could endanger the population or property. These include inappropriate or atypical behaviour of individuals or groups in urban environments. The project will also analyse possible internet threats, including illegal accesses to private data through the internet and possible misuse thereof.

The project's first task is to monitor physical objects and detect possible threats.

- Identification and observation of moving objects in urban architecture. This involves systems which determine the geographical coordinates of objects and their recording, allowing to track the history of an object's movement or its current location. The system can also be used to rescue people in need.
- Identification and observation of individuals and objects to evaluate possible threats. This is a surveillance system for collection of data using microphones, video cameras or special sensors for detecting abnormal behaviour or violence.
- Biometry (identification/recognition of persons) and intelligent methods of extracting and delivering security information. Indect will investigate biometry in a wider context, i.e. connecting to artificial intelligence in order to detect abnormal behaviour in individuals.

Indect's other task is the monitoring of computer networks and threat detection:

- searching for defined information on various internet portals, discussion groups or chats;
- processing multimedia information with the help of special marks (hash or watermarking) and subsequent use for database searches; watermarking should be the first clue regarding information match;
- monitoring behaviour in computer networks in order to detect atypical behaviour. For this purpose, agents will be designed and placed on various network hubs to collect the required information.

Collected data must be made accessible to appropriate users from the state administration. The project foresees the design of a portal with a unified interface for end-users. To this end, the project intends to link databases that may physically be located in different geographical locations while ensuring the protection of acquired data from unauthorised access.

The Indect project is important in relation to handling large amounts of different types of data which will be systematically classified, compressed, designated and stored in data centres. The new method of watermarking, resistant to compression damage, will be used to process multimedia content. Hashes will not only speed up searches, but also allow for classification according to other elements.

As an example, a picture of a man in a coat with a suitcase can be classified not only on the basis of shapes (pixel similarity), but also by designating: person — man — black coat — suitcase. This information will enable fast searches in different databases and help locate similar pictures or recordings, to be analysed from a security point of view.

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Project title

Intelligent information system supporting observation, searching and detection for security of citizens in urban environment

Project acronym

Indect

Programme

FP7: Security

Project type

CP

Project duration

60 months

EC contribution

EUR 10.9 million

Project coordination

Professor Andrzej Dziech, PhD, AGH Krakow, Poland

Czech partner

Dr Jaroslav Zdrálek, VŠB-Technical University of Ostrava

Partner countries

10

Partner institutions

17

Project website

http://www.indect-project.eu

Project on CORDIS

You can access the factsheet of the project on the CORDIS website. Using the Advanced Search function, click on 'Projects', then enter the project acronym in the acronym field.

http://cordis.europa.eu

JHR-CP

The French Commission for Atomic Energy (CEA) manages a European Strategy Forum on Research Infrastructures (ESFRI) project to develop and construct the Jules Horowitz Reactor (JHR). This reactor will be built with a thermal power of 100 MW for the purpose of R & D, including experiments on construction materials and fission reactor fuels of present and future generations. In mid-2005, the Nuclear Research Institute (NRI) Řež plc, Czech Republic, received a proposal for participation in this project.

The JHR plant will be built on the site of the CEA research centre of Cadarache in France. The first criticality is expected to be achieved by the end of 2013, and the operation to start at the beginning of 2014. Construction and testing are scheduled for the period 2008 to 2013.

The new JHR was set up as a project with international participation — not only during the financial and construction phase, but also during the reactor operation phase. The research carried out within the JHR operation will further ensure the nuclear safety and effective operation of current and developing nuclear power plants.

From this point of view, the participation of the Czech partner in the development of the JHR is beneficial for the Czech Republic. Benefits are expected (not only for the Czech Republic) in the economic field and also in the field of R & D related to new nuclear techniques and technologies. The research results will be also applied in non-nuclear and non-energetic utilisation. Last but not least, the benefits of participation will also spread to the field protection of human health through the development of new types of radioisotopes and up-to-date medical diagnostic methods.

The project's aims are (both during the plant construction and JHR operation phases):

- to support the safe operation of nuclear power plants (maintaining the highest levels of safety, effectiveness of fuel cycle and service life, competitiveness);
- to find solutions to general questions arising in the nuclear field, also by means of common programmes coordinated in co-operation with industry, research organisations and regulatory authorities; maintain and develop the necessary knowledge and educational capacity on high scientific and technical levels;
- to assess and support built evolutional nuclear power stations, R & D on innovated types of nuclear reactors for the generation of electricity, high-potential heat, waste transmutation and other applications oriented to tailor research and solutions to technical problems which may emerge in the process of qualification of future nuclear systems;
- to develop new radiopharmaceuticals and medical diagnostic methods, set up experiments for up-to-date radiopharmaceutical research, develop diagnostics with radiopharmaceutical applications, medicine and diagnostics.

© JHR-CP

Project title

Jules Horowitz Reactor — Collaborative project

Project acronym

JHR-CP

Programme

FP7: 'Euratom fission'

Project type

CP

Project duration

12 months

EC contribution

EUR 1.75 million

Project coordination

Jean-Pierre Chauvin, Commissariat à l'énergie atomique (CEA), France

Czech partner

Nuclear Research Institute (NRI) Řež plc

Partner countries

5

Partner institutions

10

Project website

http://www-cadarache.cea.fr/rjh/index.html

Project on CORDIS

You can access the factsheet of the project on the CORDIS website. Using the Advanced Search function, click on 'Projects', then enter the project acronym in the acronym field.

http://cordis.europa.eu

LINEE

In Europe today, almost 30 official languages as well as hundreds of immigrant, minority and regional languages are used for both oral and written communication, including signs in public places. LINEE is a scientific network aimed at investigating linguistic diversity in Europe in a coherent and interdisciplinary manner. The general aim is to ease European integration by facilitating the communication between countries and their inhabitants.

LINEE will develop an innovative, visible and durable scientific network to overcome scientific fragmentation in Europe and serve as a worldwide quality and knowledge-based reference framework. The main objectives are: to raise the visibility of linguistic diversity as a key issue in European integration; to restructure the scientific space through new theoretical platforms; and to reassess traditional research.

The research takes place within four thematic areas:
- language, identity and culture;
- language policy and planning;
- multilingualism and education;
- language and economy.

In relation to these four areas, LINEE's overall research goals are:
- to clarify the saliency of language as an identity marker in the EU;
- to examine the adequacy of existing language policy and language planning efforts in EU Member States;
- to clarify the shift to multilingualism by analysing foreign and minority language teaching in the educational systems of the individual EU Member States;
- to analyse the interplay between language and economy, and provide results that can impact on the building of a knowledge-based society.

Research within the listed thematic areas takes place on three analytical levels: European, national and regional. The combination of research areas, goals and levels results in altogether 12 sub-projects, attended by two to five partners countries/institutions each.

The Charles University team from the Czech Republic — which consists of two senior researchers, three junior researchers and three post-gradual students — is mostly involved in the thematic area 'Language and economy'. This includes study on labour markets, the knowledge economy, language and mobility in Europe. It focuses on the impact of language diversity on the shaping of the common European labour market.

The second thematic area called 'Multilingualism amongst minority populations: a case of transcultural capital or social exclusion?' is concerned with the economic factors that may increase or decrease migrants' motivation to learn a local language.

The third one, 'Linguistic diversity in large multinational companies', is oriented towards the function of language in economic contexts. The Prague team is also involved in other research areas, such as 'Local and regional varieties as markers of identity' or 'European discourses on multilingualism: language policy-planning at the supranational level'.

LINEE, being an NoE, is also oriented towards training young professionals who focus on issues of multilingualism. The annual training institutes are one form of such training, the next one to take place in Prague in 2009.

© LINEE, 2009

Project title

Languages in a network of European excellence

Project acronym

LINEE

Programme

FP6: 'Citizens and governance in a knowledge-based society'

Project type

NoE

Project duration

48 months

EC contribution

EUR 5 million

Project coordination

Iwar Werlen, University of Bern, Switzerland

Czech partner

Jiří Nekvapil, Charles University, Prague

Partner countries

9

Partner institutions

9

Project website

http://www.linee.info

Project on CORDIS

You can access the factsheet of the project on the CORDIS website. Using the Advanced Search function, click on 'Projects', then enter the project acronym in the acronym field.

http://cordis.europa.eu

Masmicro

The overall goals of the Masmicro project were to develop an integrated system for European industries working in the field of miniature or micrometre production. This system included an integrated device for mass manufacture of miniature products and micro-products, and an educational programme for technology transfer and workers' training in the industry.

Project title

Integration of manufacturing systems for mass-manufacture of miniature/micro-products

Project acronym

Masmicro

Programme

FP6: 'Nanotechnologies and nanosciences, knowledge-based multifunctional materials and new production processes and devices'

Project type

IP

Project duration

51 months

EC contribution

EUR 12.5 million

Project coordination

Dr Yi Qin, University of Strathclyde, Glasgow, United Kingdom

Czech partner

Dr Michal Zemko,
COMTES FHT a.s., Dobřany

Partner countries

13

Partner institutions

36

Project website

http://www.masmicro.net

Project on CORDIS

You can access the factsheet of the project on the CORDIS website. Using the Advanced Search function, click on 'Projects', then enter the project acronym in the acronym field.

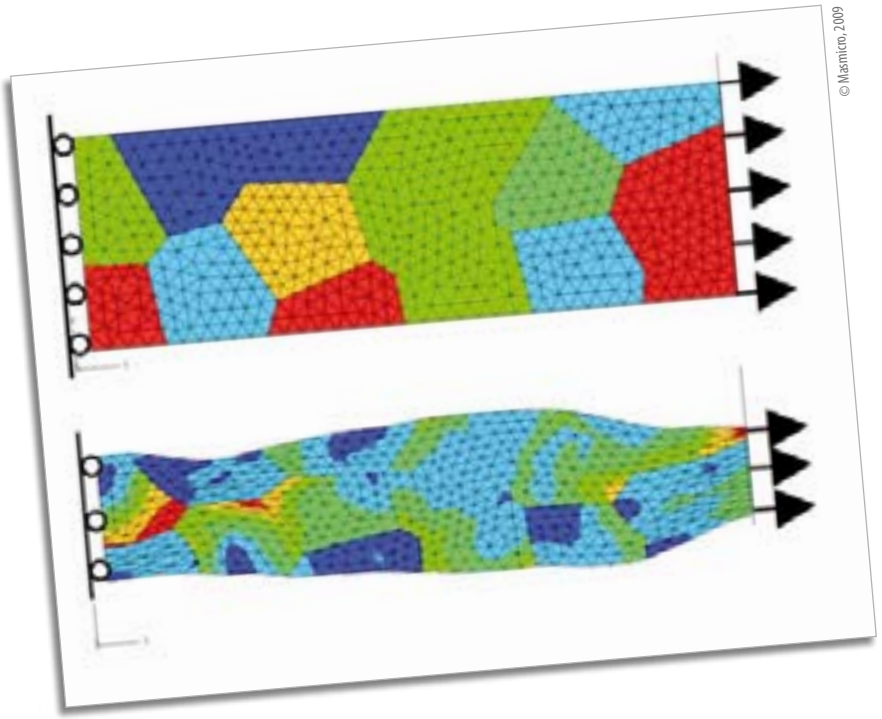
http://cordis.europa.eu

The aim of the research was to find a cutting-edge solution to the main technological problems related to the mass production of miniature products and micro-products. COMTES FHT a. s. participated in the project's preparation and investigations from the outset. The company's activity is mainly oriented at applied material research and at technological moulding and heat treatment research.

In the area of the analyses, modelling of micro-product moulding was carried out with the help of MKP, which were preceded by material analyses in the COMTES FHT a. s. laboratories of semi-finished products for the manufacture of micro-products. An application was developed for converting structures identified through experimental methods (REM, EBSD) into the Deform programme. Theories of crystal plasticity were implemented in the Deform programme as a new material model for the purposes of moulding analyses in micro-dimensions. The results were verified in cooperation with other members of the consortium.

For the project's work on moulding tools, COMTES FHT a. s. participated in designing materials for the tools and their heat treatment. A method of micro-product heat treatment with minimal shape deformation was developed.

The Masmicro project was formally concluded in 2008, and a virtual company for the support and commercialisation of the results achieved was founded to continue to promote long-term cooperation. Overall, 52 original, usable results were produced, including: new device prototypes (micro-moulding, micro-machining); industrial designs; material testing devices; transport systems; manipulation, inspection, and assembly of micro-products; software for analysis of crystal plasticity of metals and production control; and internet knowledge bases.



PathogenCombat

PathogenCombat is one of 13 FP6 research projects in which the Veterinary Research Institute, Brno, Czech Republic is participating. The project will contribute to food safety and consumer protection by generating more knowledge on food pathogens (bacteria and viruses) that can cause diseases in humans.

Mycobacteria, as food pathogens, are still considered less important than the more well-known salmonella or campylobacters. Mycobacteria are very resistant and may survive pasteurisation and insufficiently rigorous heat treatment of food. Those with compromised immune systems or people who have undergone transplantations may become ill not only after inhaling aerosol droplets containing mycobacteria or following skin injury, but also from contaminated food and water. Large quantities of *Mycobacterium avium* subspecies *paratuberculosis* may be found in the milk and meat of ruminants suffering from paratuberculosis which is a very common disease in cattle and sheep that causes great losses to farmers. Other mycobacterial species may also colonise biofilms in reservoirs and drinking water distribution systems.

Project investigators wish to contribute to the discussion concerning a role for mycobacteria in the etiology of Crohn's disease and certain other autoimmune and autoinflammatory diseases in which peptidoglycans and other components from bacterial cell walls play roles. Mycobacteria may constitute food allergens or triggers of different chronic diseases in humans. The PathogenCombat project contributes to knowledge dissemination in the area of food safety and consumer protection. The detection of mycobacteria in food and in the environment and the development of new diagnostic methods and procedures for the control of paratuberculosis in cattle and sheep are important tools for increasing consumer protection. The project also strives to mediate an exchange of opinions and experience between the experts from different fields and contributes greatly to international collaboration.

The researchers at the Veterinary Research Institute have established and maintain a database of published results for the project. They were also significant contributors to the book *The Ecology of Mycobacteria: Impact on Animal's and Human's Health*. A round-table discussion on 'Bacterial triggers in the etiology of Crohn's disease and other autoimmune and autoinflammatory diseases' is being organised by the PathogenCombat project, taking place in the Czech Republic in May 2009.

Partnership in an IP offers a unique opportunity for cooperation between project investigator teams, allows for communication of findings and the adoption of efficient ways of management and evaluation of research projects. The Czech representative on the PathogenCombat External Advisory Board uses the insights afforded by this position to contribute to the research management in the Czech Republic.

Project title

Control and prevention of emerging and future pathogens at cellular and molecular level throughout the food chain

Project acronym

PathogenCombat

Programme

FP6: 'Food quality and safety'

Project type

IP

Project duration

60 months

EC contribution

EUR 11.27 million

Project coordination

Professor Mogens Jakobsen, The Royal Veterinary and Agricultural University, Copenhagen, Denmark

Czech partner

Professor Ivo Pavlík, Veterinary Research Institute, Brno

Partner countries

16

Partner institutions

44

Project website

http://www.pathogencombat.com

Project on CORDIS

You can access the factsheet of the project on the CORDIS website. Using the Advanced Search function, click on 'Projects', then enter the project acronym in the acronym field.

http://cordis.europa.eu

Percatech

The objective of the Percatech project was to develop and secure the effective production of European perch (*Perca fluviatilis*) fish stock which was subsequently used in intensive fish breeding with the intention of increasing production of marketable European perch. The project was approved by the European Commission and investigations began in autumn 2004.

Project title

Securing juvenile production of Eurasian perch by improving reproduction and larval rearing

Project acronym

Percatech

Programme

FP6: 'Specific measures for SMEs'

Project type

Cooperative research project

Project duration

24 months

EC contribution

EUR 765 000

Project coordination

Université Henri Poincaré, Nancy, France

Czech partner

Research Institute of Fish Culture and Hydrobiology, Vodňany

Partner countries

6

Partner institutions

11

Project website

http://www.ensaia.inpl-nancy.fr/percatech

Project on CORDIS

You can access the factsheet of the project on the CORDIS website. Using the Advanced Search function, click on 'Projects', then enter the project acronym in the acronym field.

http://cordis.europa.eu

The project investigated the following issues:

- an environmentally friendly breeding of brood fish in controlled conditions;
- feeding of brood fish to guarantee quality offspring;
- possibilities of environmental stimulation for out-of-season spawning of brood fish;
- reducing breeders' mortality during the spawning period and after;
- mass artificial spawning and roe incubation;
- larvae and juvenile production with an improved genetic basis;
- domestication process and production of an all-female population of the European perch;
- and socioeconomic aspects of larvae and juvenile production of the European perch in Europe.

The team from the Research Institute of Fish Culture and Hydrobiology (VURH JU) in Vodňany, Czech Republic, was responsible for the effective and stable production of larvae gained from a hormonally stimulated spawn of brood fish, and also for an evaluation of sperm quality in various forms of bred milts of the European perch.

Rybářství Nové Hrady (Fishery in Nové Hrady), Czech Republic, which only breeds the European perch as a supplemental fish in market carp production ponds, was the second Czech participant in the project. The IP should help this participant, a typical SME, to increase stock production to achieve higher representation of the European perch in breeding and in the final market offer.

The European perch is widespread in almost the whole of Europe. In central Europe, it lives in lakes, dams, ponds and their ditches. In some European countries, especially in the alpine area (Austria, France, Germany and Switzerland), the European perch represents a popular culinary speciality. The market for and the consumption of European perch is still only regional. The highest consumption is in Switzerland — up to 6 000 t of filleted perch per year, followed by Germany (2 000 t), France (1 500 t) and Austria (500 t). The fish is offered in a semi-finished form — fillets of 20–30 g — from perch weighing 50–100 g, which means about 15 cm of fish body length.

There are 21 000 t of marketable European perch, primarily from lakes, produced annually in 25 European countries. The biggest producers are Estonia, Finland and Russia. According to statistics, only about 5 % of this amount, around 315 t, comes from intensive breeding, even though the perch can be bred in recirculating aquacultures with warmed water. Most farms are in Ireland; others are in France, Sweden and Switzerland.

An increased supply of the European perch could be interesting for the Czech market too. The popularity of their most traditional fish, the carp, as well as market fish (such as the trout, salmon, catfish of the *Pangasius* family and the predatory kinds) has been generally declining in Europe in recent years — the European perch and the glass-eyed pike are beginning to become the alternatives.

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Prodactool

Successful maintaining of complex processes very much depends on the experience, skills and intuition of a human being — the operator. The reason is that exploiting useful information hidden in process data provided by a control/monitoring system is difficult or even impossible. This concerns industrial processes, typically controlled by a network of computers, as well as a broad range of economic, social and medical processes.

An international consortium consisting of partners from the Czech Republic, Ireland and the United Kingdom finished a successful project, Prodactool, providing a decision-support tool for operators of complex processes. The designed advisory system is based on a set of advanced algorithms and additional modules incorporated in the Mixtools package. The overall idea is to process archive data available, in order to obtain representative description of the process behaviour under various conditions in a form of multi dimensional probability mixtures. Then, based on current process requirements, an appropriate mixture is used together with actual incoming data to build an advisory mixture. Particular recommendations are offered to the operator via a specific graphical user interface. The operator is always free to refuse a recommendation.

For research purposes, the package can be used as a toolbox within the Matlab environment. For a full-scale application, the package is implemented into a Matlab-independent application code which can be further integrated with an existing control and/or monitoring system.

The advisory system was tested in four different application areas within the project framework: environment (prediction of urban traffic); medicine (treatment of thyroid gland carcinoma); fault detection; and industry. The industrial application resulted in a full-scale online system, while the rest of applications represent case studies and offline implementation.

The industrial implementation serves as an advisory system for operators of a fine cold rolling mill. Huge archives of collected data were batch processed to obtain process description. Quality analysis has shown that although the operator is free to make their own decisions, it is worth following the recommendations provided by the advisory system. During the several months in which the system has been operating, production potential has increased remarkably while preserving high product quality.

Human superiority, preserved by the approach, makes the system suitable even for critical applications (e.g. medicine). The tool could help, for example, with routine evaluations of biosignal records.

The system and its core — the Mixtools package — are being further innovated, in particular the software.

Project title

Decision support tool for complex industrial processes based on probabilistic data clustering

Project acronym

Prodactool

Programme

FP5: IST 'Future emerging technologies'

Project type

STREP

Project duration

36 months

EC contribution

EUR 1.5 million

Project coordination

Kevin Warwick, The University of Reading, Department of Cybernetics, United Kingdom

Czech partners

Miroslav Kárný, Institute of Information Theory and Automation (UTIA), ASCR, Prague
Fiala Pavel, Compureg s.r.o., Pilsen
Vaclav Václav Nejdl, Kovohutě Rokycany a.s., Rokycany

Partner countries

3

Partner institutions

5

Project website

http://www.prodactool.rdg.ac.uk

Project on CORDIS

You can access the factsheet of the project on the CORDIS website. Using the Advanced Search function, click on 'Projects', then enter the project acronym in the acronym field.

http://cordis.europa.eu

ResearchersNight

The 2008 ResearchersNight project was a set of entertainment programmes for scientists and the public, financially supported by the European Commission. Its aim was to present scientists as ordinary people and persuade the public that a scientific career may be an interesting choice for young people.

Project title

The 'Researchers' night' 2008 in the Czech Republic

Project acronym

ResearchersNight

Programme

FP7: People

Project type

CSA

Project duration

7 months

EC contribution

max. EUR 60 000

Project coordination

Techmania Science Center, Pilsen

Partner countries

1

Partner institutions

6

Project website

http://www.noc-vedcu.cz

Project on CORDIS

http://ec.europa.eu/research/researchersineurope/events/researchersnight08/events_en.htm

On 28 September 2008, the 'Researchers' night' took place in the whole of Europe again. Six organisations participated in the Czech Republic, and welcomed approximately 16 000 visitors.

The Czech Republic's 'Researchers' night' was coordinated by the Techmania Science Center, Pilsen, which endeavours to increase public interest in science and technology, and especially inspire children and youth to link their professional careers with technical fields. The Techmania Science Center has already participated as one of the partners in 'Researchers' nights' in 2006 and 2007. Other Czech Republic organisations which joined the project in 2008 included:

- Planetarium, Prague;
- Faculty of Chemistry, Brno University of Technology;
- Masaryk University, Brno;
- Faculty of Science, University of South Bohemia;
- Czech Astronomical Society, with branches and planetariums across the country.

At the Štefánkova hvězdárna (Štefánek planetarium) in Prague, visitors were able to chart and analyse a drawing of the Sun's photosphere. Lecture tents were installed in front of the planetarium where the 'Astrobus' programme took place in the form of a mobile astronomical observatory that visits schools and children camps all year round.

Employees of the University of Technology and the Masaryk University in Brno demonstrated how to hack into a wireless network and presented new findings from the Antarctic. Visitors could ask to have their skin and hair types diagnosed. Apart from that, visitors were also able to test different kinds of cosmetic preparatives or determine the amount of undesirable substances in vegetables, fruits, or water.

The 'Researchers' night' in České Budějovice took place in the Solnice club and the Kotva cinema. Scientists performed in bigbeat and punk music groups, and there was also a blues group led by a biophysics professor from France. Interesting microscopic experiments were projected on the screen behind the performing groups.

The Czech Astronomical Society, with its branches and planetariums across the entire country, prepared a rich astronomical programme that can rarely be found during regular opening hours. Visitors to the Astronomical Institute of the ASCR could observe how the biggest telescope in the Czech Republic is used.

Outside of the project coordinated by the Techmania Science Center and without financial support from the European Commission, the Tomas Bata University, Zlín, in the Czech Republic also contributed with its own popular science programme. Non-traditional topics were also included in this programme, such as the 'Supersonic speeds of drinking water', 'Scientific analysis of butter spreads of the 1st and 2nd type', or the 'Symbiotic relation of small molecules and society'. Simultaneously, researchers from the Tomas Bata University put on an exhibition of pictures and photographs.

© Researchers night, 2009

RISET

The aim of the FP6 RISET project is to bring about the so-called transplantation tolerance in clinical medicine. Working on this project are 25 partner organisations from 12 countries.

The individual workgroups are investigating questions related to: finding new tolerance markers; carrying out pre-clinical (experimental) studies on laboratory animals and clinical studies; and informing the professionals and patients about the meaning of the project. Studies that have been carried out up to now show that it is not possible to bring about tolerance in human transplantology using existing means. Therefore, most of the projects now focus on minimising additional immunosuppression.

At IKEM, the researchers are investigating a clinical study of phase I of clinical trials on patients after kidney transplants who are first administered monoclonal antidotes, alemptuzumab (known as Mabcampath) and infliximab. The patients are then treated with only one immunosuppressive: sirolim or takrolim.

The aim of the project is to prove that patients with minimal immunosuppression benefit from the absence of side effects of other drugs necessary for transplantations. Another goal is to find new biomarkers associated with transplantation tolerance with the help of new modern techniques performed in partner institutions. There is close cooperation on this clinical project, especially with the partners from Charité Berlin, Professor Volk and Professor Reinke. In the study, 17 patients have so far been included and the results are very encouraging.

Besides this clinical study, there has been collaboration on two other projects within the RISET consortium: examination of the influence of genic variants of hemoxygenase-1 on the fate of transplanted kidneys; and examination of the influence of different transcripts on the fate of implants in early acute rejection. These projects have already been concluded and are the subject of publications in international literature.

Project title

Reprogramming the immune system for the establishment of tolerance

Project acronym

RISET

Programme

FP6: 'Life sciences, genomics and biotechnology for health'

Project type

IP

Project duration

60 months

EC contribution

EUR 9.78 million

Project coordination

Professor Michel Goldman, Université Libre de Bruxelles, Belgium

Czech partner

Professor Ondřej Viklický, Institute for Clinical and Experimental Medicine, Prague

Partner countries

12

Partner institutions

25

Project website

http://www.risetfp6.org

Project on CORDIS

You can access the factsheet of the project on the CORDIS website. Using the Advanced Search function, click on 'Projects', then enter the project acronym in the acronym field.

http://cordis.europa.eu

Synbiosis

The Synbiosis project was selected by the European Commission for FP7 financing and thereby became the first project in the field of 'Regions of Knowledge' which is coordinated from the Czech Republic. The project contributes, on an international scale, to maximising the utilisation of biotech research infrastructures for the development of the south Moravian region.

Project title

Maximising synergies for central European biotech research infrastructures

Project acronym

Synbiosis

Programme

FP7: 'Regions of Knowledge'

Project type

CSA

Project duration

36 months

EC contribution

EUR 939 000

Project coordination

Dr Zlatuše Novotná, South Moravian Innovation Centre, Brno

Partner countries

2

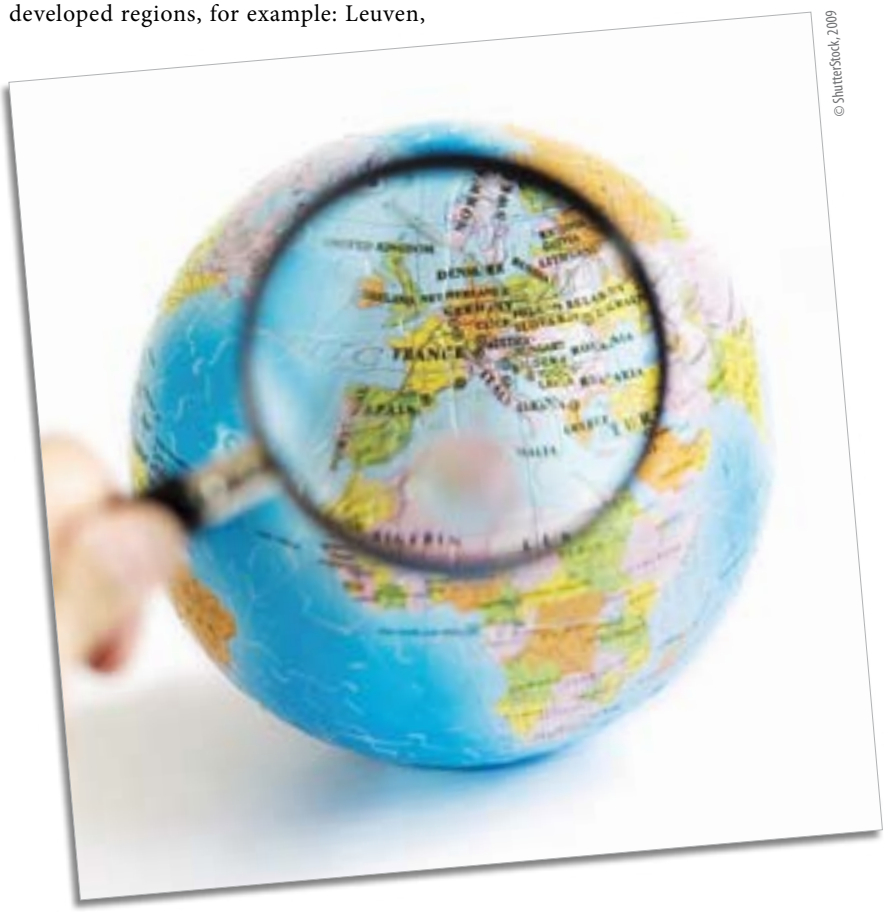
Partner institutions

7

Synbiosis is concerned with setting up a model for collaboration between academic and commercial spheres with the goal of opening existing and planned research infrastructures in the south Moravian region for cooperation with the commercial sector. This will be handled in such a way as to ensure that they are most effectively used, so that research results find maximum use in practice. A component of the project is to transfer experiences from developed European regions, in which cutting-edge research infrastructures comprise a substantial part of knowledge, innovation and economic development.

Another aspect of the project regards the planning of research infrastructures. Those built in the newer EU Member States should be complementary to those already existing and should result in the effective combination of research finance from European Commission sources. The partner regions involved are southern Moravia and the north Italian region of Friuli-Venezia-Giulia, although the extent of the project is Europe-wide, anticipating collaboration on various levels with other developed regions, for example: Leuven, Belgium; Vienna, Austria; and Cambridge, United Kingdom. Part of the total grant is earmarked for such collaboration. The main research infrastructures set to benefit from the information exchange resulting from this research project are from both partner regions.

In the project's first analytical phase, its partners will conduct a qualitative and quantitative analysis of the state-of-the-art, and the actual transfer of knowledge and experience will follow based on workshops, round tables and study visits in partner regions. The closing phase is the creation of an action plan which, on the basis of the existing outputs of the project, will suggest directions for further collaboration of the two regions and sources for its financing. The local governments of the partner regions will also be involved in preparing the action plan. The largest benefit for southern Moravia will be enlightenment from the experiences of foreign institutions from innovatively developed regions, while the major motivation for the Italian partners is the cross-border transfer and commercial use of scientific results.



Theravac

In response to urgent medical and societal needs for novel immunotherapies for cancer and chronic infections and for prophylactic vaccination, optimised delivery systems for vaccine-targeting dendritic cells (DCs) are being developed and clinically evaluated.

The approach relies on two new antigen delivery vectors: the detoxified adenylate cyclase toxoid (ACT) and the porcine parvovirus-like particles (PPV-VLP) which were recently shown to target DCs very efficiently and specifically, thus allowing highly efficient presentation of delivered antigens to T cells. These vaccine vectors enable the induction of strong, specific and protective immune responses and have an established record of safety and efficacy in preclinical animal models.

Based on the preclinical record of ACT-based vaccines in animal models, the leap into safety and efficacy, a phase I/II human clinical trial is being made with an ACT-based construct delivering the tyrosinase A.2 epitope as a therapeutic vaccine for metastasic melanoma.

Simultaneously to good manufacturing practice (GMP) batch production, development and clinical testing, in-depth analysis of the cellular and molecular mechanisms and of the structural basis of ACT interaction with DCs is performed, by placing particular emphasis on gaining new knowledge to improve the delivery capacity of the ACT molecule towards enhanced efficiency and broader versatility in clinical use. The PPV-VLP vector is developed in parallel by defining its cellular receptor and trafficking inside DCs, preclinical efficacy and toxicology, in order to bring this alternative vaccine carrier to the level of clinical trial maturity.

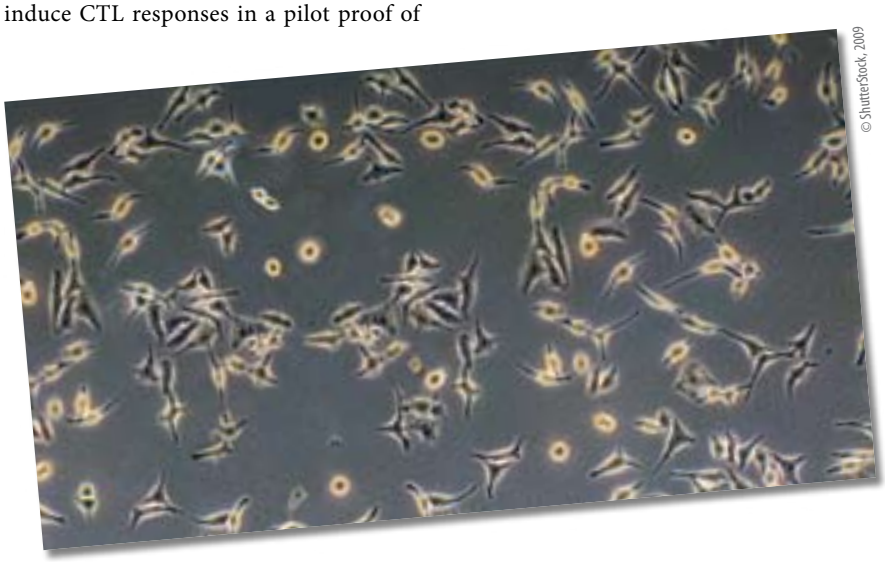
The main objectives of the project are to: develop and clinically test novel tools and technologies suitable for use in immunotherapy protocols aiming at combating cancer and evaluate the efficacy of ACT to induce CTL responses in a pilot proof of concept clinical trial. Simultaneously, R & D activities on ACT and PPV-VLP antigen delivery technologies are focused on understanding the mechanisms underlying their targeting and interaction with DCs.

ACT was recently used for the development of a therapeutic vaccine against human papillomavirus-associated cervical cancers. Using a specific mouse model, progress has been made in the study of different tumour treatment approaches.

In the clinical part of the project, a GMP batch of ACT suitable for a phase I clinical trial is being produced for release in May 2009. The research part of the project is organised along two parallel lines of investigation: the pre-clinical development of anti-melanoma vaccine(s) based on ACT and PPV-VLP; and the detailed understanding of their interaction with DCs.

Important progress has been made in pre-clinical development of ACT-carrying tumour epitopes, defining an effective therapeutic protocol. The researchers have made significant progress in understanding the toxoid penetration into the target cells and the mechanisms underlying the toxoid interaction with its receptor, signalling activity on myeloid cells and the capacity to deliver the antigens into cells.

This was efficiently used to generate a second generation of vaccine vectors exhibiting improved delivery capacities and an enhanced safety profile. Furthermore, new constructs have been obtained, which suppress undesirable properties of the protein, thus improving its potential as a vaccine delivery vehicle.



Project title

Optimised delivery systems for vaccines targeted to dendritic cells

Project acronym

Theravac

Programme

FP6: 'Life sciences, genomics and biotechnology for health'

Project type

STREP

Project duration

63 months

EC contribution

EUR 2.267 million

Project coordination

Professor Claude Leclerc, Institut Pasteur, Paris, France

Czech partner

Dr Peter Šebo, Institute of Microbiology ASCR, v. v. i., Prague

Partner countries

6

Partner institutions

7

Project on CORDIS

You can access the factsheet of the project on the CORDIS website. Using the Advanced Search function, click on 'Projects', then enter the project acronym in the acronym field.

http://cordis.europa.eu

TITAM

The TITAM project falls under the Marie Curie 'Host fellowship for transfer of knowledge' programme. The project's investigations started in March 2006 and were concluded in December 2008.

The project's objective was to improve the research potential of the Transport Research Centre (CDV), Brno, Czech Republic, namely the Division of Transport Infrastructure and Environment in the area of transport infrastructure, technologies and management.

The project included attachments of CDV researchers to professional foreign workplaces, as well as visits of foreign experts to the CDV. Seven CDV professionals were sent on long-term attachments to two European research institutions — the Federal Highway Research Institute (BASt, Bundesanstalt für Straßenwesen, Germany) and the Transport Research Laboratory, United Kingdom. On the basis of an international call, six experienced foreign experts were chosen to train CDV employees in the Czech Republic.

The professional attachments were mainly oriented at:

- pavement management system (PMS);
- bridge management system (BMS);
- full-scale laboratory testing (Full);
- pavement surface assessment (PSA);
- ground penetrating radar (GPR).

During their attachments, the CDV researchers worked on real projects related to the areas of interest. In this way, they acquired new knowledge and skills in the given areas under the guidance of experienced foreign professionals.

External experts trained all CDV employees who conduct research in these areas, directly in CDV workplaces and laboratories. Several professional seminars took place during the attachments.

The best practice guidance was drawn up for each of the listed areas. At the end of the project, a concluding seminar was organised during the conference held on the occasion of the 15th anniversary of the founding of the Transport Research Centre. The results of the project's investigations were also regularly published in magazines and presented at conferences.

Project title

Transport infrastructure technologies and management

Project acronym

TITAM

Programme

FP6: 'Marie Curie action'

Project type

Transfer of knowledge

Project duration

34 months

EC contribution

EUR 400 000

Project coordination

Dr Karel Pospíšil, Transport Research Centre, Czech Republic

Partner countries

3

Partner institutions

3

Project on CORDIS

You can access the factsheet of the project on the CORDIS website. Using the Advanced Search function, click on 'Projects', then enter the project acronym in the acronym field.

http://cordis.europa.eu

TRACE

The overall goal of the TRACE project is to develop traceability methods and systems that will provide consumers with added confidence in the authenticity of European food. These systems will not only track and trace foods but will also incorporate additional data relating to the origin of food.

Significant correlations were found for the first matrix studied in the project, namely mineral water. By correlating certain stable isotopes, minerals and trace elements found in mineral water to the local environment, TRACE scientists were able to develop mathematical models that predict what levels should be found in a mineral water of given provenance. Furthermore, successful blind testing of the new procedure took place in 2007 with a 100 % success rate in correctly identifying two target mineral water samples from 18 other mineral and tap water samples. This was the first proof of concept that a system could be established where specifications relating to geographical origin could be produced automatically a priori, for use in checking provenance claims.

Other major technical outputs to date came from TRACE's work on developing (bio) analytical methods for confirming:

- varietal/breed information;
- geographical origin;
- and production technology of particular commodity.

In 2007, testing and validation of molecular markers able to trace French PGI beef products was completed. Similarly, profiling strategies employing various spectroscopic techniques were developed for characterisation of honey (Corsican versus non-Corsican origin) and cereal-based products (Rochefort 8 trappist beer versus other Belgian brands). The ambient mass spectrometry with a unique DART ion source — an emerging technology implemented by the Institute of Chemical Technology, Prague, Czech Republic — enabled the sample characteristics to be examined in real time. The markers will make it easier to verify breed/variety claims such as those relating to beef, honey and cereal — 'protected denomination of origin' products.

A universal TraceCore XML has been produced and disseminated on the web (http://www.tracefood.org). The XML language permits a standardised means of data exchange between different actors in the food traceability chain. Several traceability software suppliers have already adopted TraceCore XML and discussions are currently ongoing with XML standardisation bodies on adoption of the standard. The system was successfully tested in the mineral water chain during 2007 and is currently undergoing demonstration within the honey and chicken sectors in France and China respectively.

TRACE has completed a comprehensive three-year study into European consumer attitudes to food traceability and authenticity. The work found that consumers relate safety benefits with identification and withdrawal of unsafe products, whereas quality benefits refer to eliminating fraud with respect to the labelling of origin, process and food composition. A large pan-European survey and conjoint choice experiment confirmed that European consumers are generally against paying for traceable foods and being overloaded with additional information from traceability systems although they were in favour of reliable information on country-of-origin, preferably via the internet.

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Project title

Tracing food commodities in Europe

Project acronym

TRACE

Programme

FP6: 'Food quality and safety'

Project type

IP

Project duration

60 months

EC contribution

EUR 12.22 million

Project coordination

Paul Brereton, Central Science Laboratory, York, United Kingdom

Czech partner

Professor Jana Hajšlová, Institute of Chemical Technology, Prague

Partner countries

18

Partner institutions

52

Project website

http://www.trace.eu.org

Project on CORDIS

You can access the factsheet of the project on the CORDIS website. Using the Advanced Search function, click on 'Projects', then enter the project acronym in the acronym field.

http://cordis.europa.eu

National Information Network supports participation of Czech teams in the ERA


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Research teams from the Czech Republic have been participating in framework programme projects since FP3. The intensity of international research cooperation evidenced by the number of participations by Czech teams, together with the amount of contracted finances, has grown since that time. This is also thanks to the gradual building of a national support infrastructure, oriented at helping and supporting Czech research institutions and companies when joining international research cooperation projects.

The Czech National Information Network for EU Framework Programmes (NINET) is being built with financial support of the Ministry of Education, Youth and Sports. The network had already become operational during FP5 and its structure was gradually adjusted to correspond with the needs and growing requirements for providing information and consulting support to Czech teams participating in FP6 and FP7.

The central point of the network is the National Information Centre for European Research (NICER), which is a part of the Technology Centre of the Academy of Sciences of the Czech Republic (ASCR). Through the activities of the national contact points and in close cooperation with the Czech Liaison Office for Research (CZELO) in Brussels, it provides advanced services and support to Czech participants in the framework programme. Besides information, consulting and training activities, NICER also monitors and analyses the Czech Republic's participation in the framework programmes which contributes to the necessary feedback for the decision-makers.

Besides the NICER, a network of nine Regional Contact Organisations operates in the Czech Republic. The organisations are located in centres with high concentrations of research and educational facilities and in areas with a significant industrial innovation potential.

Another element of the national network are the Branch Contact Organisations, with an all-country field of action, that specialise in providing services reflecting specific needs of defined groups of users. A significant portion of their clients are SMEs.

An overview of the Regional and Branch Contact Organisations can be found on the websites of the Ministry of Education, Youth, and Sports at: http://www.msmt.cz and http://www.ninet.cz

Technology Centre ASCR.

National Information Network for the EU framework programmes

Technology Centre ASCR participates in the activities of the Czech EU Council Presidency

The Technology Centre of the Academy of Sciences of the Czech Republic (Technology Centre ASCR) was established in 1994 and has been developing dynamically since. It has become one of the leading workplaces of its kind in the Prague region and the entire Czech Republic, and has achieved a respected international position as evidenced by numerous invitations to prestigious international activities, projects and selective international networks.

The Technology Centre ASCR is leading the way for technology transfers, innovation support, provision of complex information for research and preparation of strategic information for public administration in the field of R & D and innovation. It runs the Czech Liaison Office for Research and Development (CZELO) in Brussels, Belgium, and operates the Innovation Centre and Business Incubator in Prague. Through its activities, the Technology Centre ASCR supports higher utilisation of research results in the commercial sector, and thus contributes to the improvement of economic competitiveness and regional development through the strengthening of the innovation-based economy. The centre also participates in the preparation of important events in the area of R & D and innovation organised as part of the Czech EU Council Presidency in 2009. It participates in extensive national and international activities oriented at R & D and innovation. For further information, please visit: http://www.tc.cz

The 'European forum on research and development impact assessment' (Eufordia 2009) conference took place in Prague on 24 and 25 February 2009, organised by the Technology Centre ASCR in cooperation with the Ministry of Education, Youth and Sports. The aim of the conference was to provide a platform for discussions about methodologies to evaluate the impact of the results of the framework programmes at both European and national levels. The conference was mainly attended by the representatives of national and international institutions that finance research programmes, representatives of grant agencies, and professionals who study policy issues in the area of R & D and research evaluation. Information about the conference can be found at: http://www.eufordia2009.eu

Another important conference organised by the Technology Centre ASCR under the patronage of the Ministry of Education, Youth and Sports and the financial support of the European Commission is the 'Euronanoforum 2009' which will be held between 2 and 5 June 2009 in the Congress Centre in Prague, Czech Republic. The conference is the fourth in the series of European conferences with a similar theme, held every two years in the country that holds the EU Council Presidency. The key topic of this year's conference will be 'nanotechnologies for sustainable development'. The participants will have the choice of several thematic sections on the application of nanotechnology in different branches of industry, healthcare, environment, power engineering and other areas. The conference website can be found at: http://www.euronanoforum2009.eu

Technology Centre ASCR.

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Technology transfer — the way to successful international cooperation

Technology transfers do not only ensure the transfer of an innovative idea materialised into a certain solution or product — their application also brings positive changes to manufacturing, selling or user processes.

The Technology Centre ASCR has a long-term experience and reputation in the transfer of R & D inventions and establishing cooperation between research and industrial sectors, especially on an international scale. This experience comes mainly from active participation in European networks oriented at the cooperation of research and industry which received EU funding and used methodologies set up by the European Commission. At present, the Technology Centre ASCR coordinates a consortium of partners in the Czech Republic that hosts the activities of the Enterprise Europe Network (EEN) for which the transfer of knowledge and technologies represents one of the priorities.

The activities related to the transfer of technologies itself are concerned both with finding a suitable foreign technology for Czech companies and, more importantly, with identifying technologies of Czech origin that may, but do not need to be, protected by one of the tools for intellectual property protection. Besides technological solutions, services provided to Czech companies include searching for suitable partners for other forms of cooperation, according to the client's requests. The most frequently used tools for effective transfer activities include an extensive database of supply and demand for innovation technologies accessible to all partners of the EEN. Should the clients be interested, other assistance services related to the process of technological cooperation can be provided, such as help with the preparation of contracts, including licence agreements, help with negotiations and securing translation services, etc. If a contract related to a technology transfer and/or cooperation between the partners is signed, then clients may benefit from other business and/or technological support offered within the EEN. A successful transfer within Europe can also be promoted in the media.

Two examples of completed technology transfers are described below. Both show the successful conclusion of the relatively complicated procedure for technology transfers at international level, which requires an active personal assistance of technology transfer managers and their close collaboration with a client, usually a Czech innovation company. The first example of technological cooperation is the result of the technology transfer manager's effective work with the international database of technology offers and requests mentioned earlier. The second case is the result of successful negotiations of companies at a technology brokerage event organised within the EEN.

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SUCCESSFUL COLLABORATION: HOW TO JOIN TWO CONSTRUCTION MATERIALS QUICKLY AND EFFICIENTLY

A. U. Voolikuvabrik, the Estonian producer of prefabricated construction units intended for the construction of family houses, needed a solution for quick and quality gluing of polystyrene boards to fibreboards. The existing solution was not satisfactory as the company used a gluing technology that was time-consuming: it took 24 hours to reach the full strength of the joint. Of course, this had a negative impact on productivity and the number of realised orders.

For this reason, the company decided to use the international database of technology offers and requests to find a suitable technical solution. With the help of the database, the transfer manager was

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able to locate a potential partner. One of the clients of the Technology Centre ASCR is Lear j.s.c., a joint stock company, which develops and manufactures specialised glues for different industries and has a wealth of experience in construction industry. The company was therefore able to react quickly and offer several solutions to the Estonian firm. The Estonian company found one of the proposed solutions suitable and, following tests of the glue samples, decided to use it.

According to the director of Lear, the order was interesting and commercially beneficial. The company, oriented towards the domestic market and markets in neighbouring countries, benefited from the opportunity to enter the Estonian market which it had not known before. 'I had a chance to confirm that we can produce a specialised tailor-made product and realise the subsequent business transaction relatively quickly, even on an international scale, which would have been very difficult without the support of people from the technology transfers,' the company director said.

SUCCESSFUL COLLABORATION: PARKING A CAR IN THE CITY, BUT WHERE?

A number of places, and not only in the Czech Republic, are faced with the problem of where to park the ever-growing numbers of cars. Surface car parks can only deal with the situation with great difficulty; cars are parked in every available space, often blocking the road for emergency rescue services, fire fighters, or the police. The solution is based on the exploitation of automated parking buildings, both from a technical and ecological point of view.

KOMA-Ložiska Ltd, has developed and introduced to the market a unique, fully automated carousel parking system, which is not manufactured by any other producer in Europe. The system makes it easy for a driver to park, and saves on the space required for constructing large car parks.

An automated parking building refers to either an above-ground or underground car park building. Once the driver has turned off the engine and signalled that everything is fine, the car is automatically taken on to a platform and with the help of an automated control lift system, placed in a parking space, without the presence of the driver. The driver is issued a magnetic card with information about the car's location. Reversing the procedure allows the car to be retrieved by inserting the magnetic card into the payment terminal scanning slot and paying the amount due for parking.

The key advantages the system has over its competitors are that only two movements are involved manipulating a car (lifting the vehicle to the appropriate level and a horizontal movement towards a free space on that level); and most importantly, the short time required for vehicle retrieval from the parking building. Automated parking buildings designed in this way are capable of accommodating from 126 to over 300 cars, depending on the number of floors and carousels on each floor.

The other main benefits of the KOMA automated carousel parking building include parking safety and environmental friendliness and protection through the reduction of car emissions when parking, and reduced building space required. A pilot project has been built in Ostrava-Svinov, Czech Republic.

The Technology Centre ASCR assisted with a technology transfer from the Czech Republic to Poland consisting of an exclusive licence for the automated parking system. The recipient of the technology was Plazmatronika NT Sp. z o. o. Following a meeting at the 'Contact: business meetings 2008' technology brokerage event during the 'Z subcontracting 2008' trade fair in Leipzig, Germany, the Czech and Polish parties agreed on a licence contract and subsequent technical assistance. The licensing agreement allows the Polish partner to exploit the technology in the south-western region of Poland and build the first automated parking building with Czech technology in Poland.

Technology Centre ASCR.

Czech system for R & D and innovation at crossroads

Technological development based on R & D and innovation is an integral part of the socioeconomic development of all developed and developing countries. It is only through advancements in R & D, which result in the introduction of innovations, that we can face present-day global challenges, such as energetically sustainable growth, favourable environment, and ensuring people's health. Sufficient innovative performance is also a necessary prerequisite for maintaining competitiveness, economic growth and the social stability of individual countries.

The Czech Republic is currently undergoing a transition from an efficiency-driven economy to an innovation-driven economy. The Czech Republic has been achieving its economic growth mainly by investing in the expansion of production capacities while adopting modern technologies developed in economically and 'knowledge-wise' more advanced countries. To maintain future competitiveness, it will be necessary to continuously push the technological limits of production while introducing innovations in the form of new products, technological procedures, changes to work management, or new ways of selling products and services.

A favourable innovation environment and a quality system of R & D and innovation governance at national and regional levels are important conditions for the growth of innovation performance. While improvements to the innovation environment have been receiving attention in the Czech Republic for a considerable amount of time, the current system of R & D and innovation governance does not sufficiently reflect the needs of a modern innovation-driven economy. This prompted deep reforms of the system of R & D and innovation to start at a national level in 2008, accompanied by reform efforts in the area of tertiary education and education in general. The Czech Government has approved a document entitled *Reform of the System of Research, Development and Innovation in the Czech Republic* in March 2008. The document outlines the basic direction and more detailed steps to a more efficient system of R & D and innovation governance.

The reform of the system of R & D and innovation in the Czech Republic is based on a detailed analysis of the innovation environment and the Czech Republic's position in this field compared internationally. This complex analysis was made public in the Green Paper on R & D and innovation in the Czech Republic. The Green Paper was published by the Technology Centre ASCR which has started to be recognised as a think-tank for the field of science and technology policy in recent years. The Green Paper pointed out the inadequacies of the Czech national innovation system, identified areas that needed to receive more attention, and thus became the basis for the subsequent White Paper on R & D and innovation in the Czech Republic. Both papers can be found at: http://www.tc.cz/downloads

The Technology Centre ASCR prepared the White Paper in cooperation with a group of prominent Czech experts from the field of R & D and innovation, representing important institutions, universities, public administrations and the business sector. The composition of the expert group brought a plurality of opinions and ensured that experiences from various fields were taken into account and used for the drafting of proposed targets and measures for the future R & D and innovation policy.

The reform of the R & D and innovation system is characterised by the motto 'Science turns money into knowledge, innovation turns knowledge into money'. The Czech Government endeavours to establish such an innovative environment and system of R & D and innovation that would effectively contribute to the fulfilment of this motto. The reform efforts are therefore primarily directed at simplifying the system of support for R & D from public funds (decreasing the number of budget chapters contributing the R & D) and creating an R & D evaluation system that would encourage excellence in research teams and motivate them to create knowledge that would be usable in practical applications, in other words, innovations.

The reform also places significant emphasis on strengthening cooperation in the area of R & D and innovation between individual sectors that participate in the innovation process and, at an international level, contributes to the development of the ERA. In the area of human resources, the reform mainly reacts to the low number of researchers and their inadequate inter-sector and international mobility.

Despite the fact that the reform of the system of R & D and innovation in the Czech Republic contains a number of unpopular steps, it has received strong political support from the Prime Minister, Mirek Topolánek, who also chairs the Government's Council for Research, Development and Innovation. This support has, among other things, contributed to the speed with which the reform measures have been realised. A new law on support for R & D from public funds has already been submitted by the Government in the summer of 2008. Based on this law, the Czech Technological Agency will be established, which will be allocating most of the public funds for the support of applied research. This will result in a significantly simpler and more transparent system of public support for R & D, that will be accompanied by a decrease in administration expenses for both suppliers and recipients.

Another milestone of the reform is the drafting of the new 'National R & D and innovation policy for 2009–15' which will stipulate the basic policy direction in this area for the coming years. Besides the aforementioned groundwork (the Green and White Papers), other background studies were prepared for the purposes of the new 'National R & D and innovation policy'. The studies focus in particular on summarising foreign experiences with realising policies in this area, especially the paper on good foreign practices in R & D and innovation policies (the so-called Blue Paper) which suitably supplements the Green and White Papers. Together, this 'trilogy' represents an efficient tool for the creation of an innovation policy and formulation of particular measures in the R & D and innovation area. Use of the papers can be demonstrated on the following example of cooperation between public research and companies (see also scheme on page 46).

The text part of the Green Paper states that the cooperation between public research and companies is insufficient. This statement is based on an analysis from the analytical part of the Green Paper and follows from several pieces of information (in this case from statistical data and results of surveys in which research organisations and companies were polled). With regard to this weakness in the innovation system, the White Paper sets a target and proposes measures for its elimination. In this case the target is to 'improve cooperation in research, development and innovation', and one of the proposed measures is to 'support projects with joint participation of business sector and public research'. It is apparent that a number of various tools may be used for this purpose. For that reason, the measures include a reference to the paper on good foreign practices where descriptions can be found of various approaches used in foreign countries, as well as evaluations of opportunities and risks related to their introduction in the Czech Republic. Hypertext links simplify orientation in the electronic version of the Papers.

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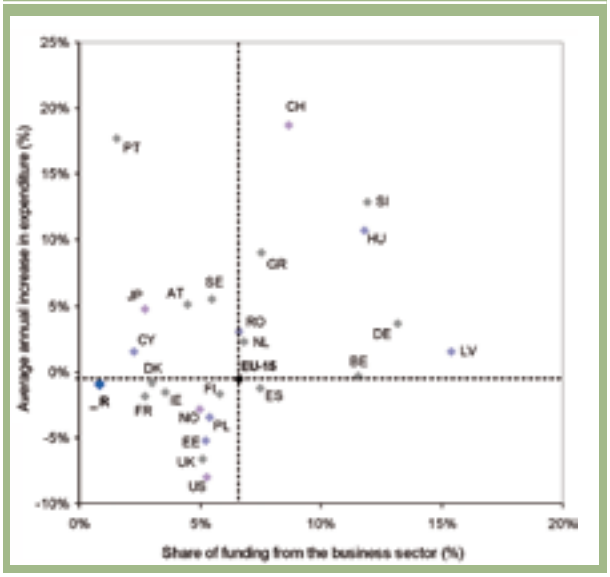
GREEN PAPER — TEXT PART

Cooperation between companies and public research and educational institutes is insufficient

GREEN PAPER — ANALYTICAL PART



WHITE PAPER

Target:
Enhance the cooperation in R & D and innovation

Measure:
Encourage projects with joint participation of the industry and public research

BLUE PAPER

Innovatievouchers		Nizozemsko
Popis:	Program tzv. Inovačních poukázek je pokračováním tří pilotních projektů realizovaných v letech 2004 až 2005 a jeho cílem je poskytnout MSP okamžitou možnost získat know-how z veřejných znalostních institucí (…) Pro podniky jsou dostupné dva typy inovačních poukázek - voucherů: „malé poukázky" s hodnotou 2 500 € (…) a „velké poukázky" hodnoty 7 500 € (…). Poukázka je platná po dobu 6 měsíců od vydání. (…)V roce 2006 bylo vydáno celkem 3 000 malých a 3 000 velkých poukázek.	
	http://www.senternovem.nl/english/	
Efekty:	(…) Program měl značnou popularitu mezi podniky a prokázal se i jeho přínos pro transfer znalostí z veřejného VaV. Z vyhodnocení programu vyplývá, že většina žadatelů před využitím poukázek dosud nevyužila žádné schéma podpory inovací a zhruba 80 % poukázek stimulovalo zakázky VaV, které by podniky bez této podpory od veřejného výzkumu nevyžadovaly. Z rozhovorů s podpořenými společnostmi také vyplývá, že administrativní zátěž byla pro podniky nízká.	
Příležitosti a rizika pro zavedení v ČR:	I když pro podporu spolupráce podniků s veřejným výzkumem existuje v ČR několik programů, u inovačních poukázek je přínosná především jejich nízká administrativní zátěž pro podniky i pro veřejný výzkum. Tímto způsobem lze iniciovat spolupráci u MSP, které s výzkumnými institucemi nebo VŠ dosud nespolupracovaly. Výsledkem finanční spoluúčasti podniků je i zvýšení podnikových výdajů na VaV.	

NATIONAL R & D AND INNOVATION POLICY

Set up a system of innovation vouchers granted to SMEs for carrying out joint research and innovation activities with research organisations

Schematic representation of the process to create the 'National R & D and innovation policy for 2009–15'

The new 'National R & D and innovation policy for 2009–15', which is currently being finalised, focuses on nine areas of the national innovation system for which it sets partial targets and a set of associated measures:

- system of R & D and innovation government;
- priorities of state support for R & D and innovation;
- amount of public support provided in relation to achieved R & D results;
- utilisation of R & D results in innovations to show efficiency of public support;
- internationalisation of R & D and innovation;
- provision of quality human resources for R & D and innovation;
- relationship of R & D and innovation to society;
- policy (concept) within a context of policies for other areas;
- periodical evaluation of the progress of the reform, fulfilment of the 'National R & D and innovation policy' and the system of public support.

Measures in the 'National R & D and innovation policy for 2009–15' are formulated in close relation to strategic documents prepared at EU level, and are included in the framework of European policies directed at the development of the ERA. In this context, the policy aspires to further develop the directions of European research identified in the framework programmes and in other initiatives for the support of R & D and innovation.

If the targets of the reform of the system of R & D and innovation and the measures of the new 'National R & D and innovation policy' are effectively fulfilled, a gradual improvement of the Czech innovation environment can be expected which would place the Czech Republic, with its functional and modern innovation system, alongside other developed countries of the EU.

Technology Centre ASCR.

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http://www.ninet.cz

Community Research and Development Information Service

http://cordis.europa.eu

CORDIS — the Community Research and Development Information Service — is an interactive information platform that keeps you up-to-date with the latest news, progress and initiatives in European research and development (R & D) activities.

CORDIS is free of charge and offers access to R & D funding programmes of the EU as well as to information on partnerships and involvement in R & D activities, and on research projects and their results. As such, it is the official entry point to the Seventh Framework Programme (FP7), its specific programmes, activities, themes and latest developments.

Czech RTD info

http://www.czechrtd.info

This website presents research and technological development (RTD) in the Czech Republic with a special focus on the framework programmes for research. It is targeted at the international public, to inform on the most important events involving Czech RTD and its current situation. Relevant documents can be found on the site, as well as links to other important websites and to research actors from both industry and SMEs. The website is administered the by Technology Centre ASCR and is available in English.

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