

INVESTMENT OPPORTUNITIES

Research and Development in the Czech Republic



Contents

Welcome to Czech Research and Development	2
Tradition of Excellent Research	3
Selected Universities	4
Science and Technology Parks	5
New Research Capacities	6
R&D Funding in the Czech Republic	8
Selected Examples of Czech R&D	11
Investors in Czech R&D	19

CzechInvest: Your Point of Entry to Czech R&D

As part of the network supporting successful R&D in the Czech Republic, CzechInvest's R&D Department provides useful guidance for everyone entering the local environment. The department possesses an excellent information base covering everything from general statistics (on R&D financing, infrastructure, publication activities, etc.) to detailed, customised expertise pertaining to particular projects and entities conducting research and development (profiles of selected outstanding R&D entities, monitoring of large R&D infrastructures, customised recommendations for investors, etc.). As a unique facilitator in the realm of R&D, we will be happy to assist you!

For more information on Czech R&D, please visit czech-research.org or contact us at research@czechinvest.org.

FOREWORD



Welcome to the Czech research, development and innovation environment. The Czech Republic has a rich scientific tradition as well as extremely high-quality human resources and well-developed infrastructure. Czech graduates can be found at prestigious foreign universities and respected institutions. Our specialists can confidently knock on the doors of leading global research institutes and multinational companies. The sectors in which we truly excel include informatics and cybernetics, medicine and biotechnology, materials and nanotechnology, nuclear energy and physics-based sciences such as optics, laser technology and optoelectronics. The Czech Republic is a global power in areas such as cybersecurity software.

Czech science has tremendous potential for the future. The number of newly built centres in the full range of sectors is a promise of extraordinary possibilities. Czech industry's links to the world's most advanced economies offer an opportunity to support applied research and to transform industrial production in line with the Industry 4.0 concept. If we promote a systematic approach in combination with an interdisciplinary perspective, the world will undoubtedly hear a lot about Czech research.

Vladimír Mařík,

Director of the Czech Institute of Informatics, Robotics and Cybernetics

”*The desire for knowledge and for overcoming the ordinary. A creative approach, intuition, enthusiasm, commitment and sacrifice. That always has been, is and will be the driving force of human cognition.*“

Antonín Holý,

chemist, inventor of successful retroviral drugs used in treating HIV



”*What is the essence of the creative process in science? Perhaps the ability to distinguish between what is important and what is marginal.*“

Jaroslav Heyrovský,

inventor of polarography and Nobel Prize laureate

Source: Archive of J. Heyrovsky Institute of Physical Chemistry of the CAS

”*Science should strike as many sparks as one's sight can bear.*“

Jan Evangelista Purkyně, prominent cell biologist



RESEARCH
& DEVELOPMENT

WELCOME TO CZECH RESEARCH AND DEVELOPMENT

THE CZECH REPUBLIC AT A GLANCE

Population: 10.5 million

Workforce: 5.3 million

Unemployment rate

(as at May 2016): 5.4%

GDP per capita (PPP, 2014): USD 31,185.9

Inflation (as at March 2016): 0.4%

Source: Czech Statistical Office, 2016

Ministry of Labour and Social Affairs of the Czech Republic
World Bank



Innovation is not new to the Czech Republic. Czech academics and entrepreneurs have been successfully exploiting new ideas for generations. What is new, however, is that the Czech Republic is now widely recognized as a centre of profitable innovation and technological entrepreneurship. Moreover, innovation throughout the economy is now being stimulated and sustained by both Czech and international companies.

Innovation Past and Future

From the country that introduced the soft contact lens to the world and successfully developed the compounds on which current anti-AIDS drugs are based, Czech companies have already left a large footprint on ground-breaking technologies in the areas of hologram production, nanofibres, speech recognition, hyaluronic acid, cybernetics, stem-cell research and astrophysics, as the Czech Republic has with one of the densest concentrations of astronomical observatories in the world. Building on this outstanding background, Czech R&D is moving ahead rapidly, with a large increase in the number of innovative local companies matched by unprecedented growth in the number of international companies engaging in technology-intensive R&D activities here.

Smart Support of Smart Projects

The innovation environment of the Czech Republic is further enhanced by the Czech government and EU support. In 2004 the country became a member of the European Union, which spurred a fundamental increase of support for science and research. Along with its access to EU Structural Funds, the country has been able to surpass the EU average investment in R&D, reaching 2% of GDP in 2014. Comprehensive national policies are another key element of the country's excellent R&D environment. The National Research, Development and Innovation Policy of the Czech Republic 2016-2020 shall ensure the competitiveness of the Czech economy in conjunction with other strategies such as the Research and Innovation Strategy for Smart Specialisation. The Key Enabling Technologies (advanced materials, nanotechnology, micro- and nano-electronics, photonics, advanced manufacturing technologies and industrial biotechnology) identified in the strategy are not the only strength of the Czech Republic, as start-ups are springing up across various sectors. The country is also keeping up with the latest trends, such as the Industry 4.0 concept, which is expected to encompass the upcoming economic transformation towards cyber-physical production systems.

Skilled and Educated People

The Czech Republic is home to some of Europe's oldest and largest technical universities, such as the Czech Technical University in Prague, which dates back to 1707 and currently has nearly 21,000 students. At 93%, the Czech Republic has the second largest proportion of adults completing at least upper secondary education in the OECD (OECD, 2015). The ability to draw extensive aid from European Union Structural Funds for the period 2014 to 2020 for the purpose of fostering R&D and enhancing the country's R&D infrastructure will help to ensure that the Czech Republic remains in the vanguard of skills provision.

R&D IN THE CZECH REPUBLIC

Total R&D spending as percentage of GDP (2014): 2%

Universities/Technical universities*:
70/18 (estimate)

Persons employed in scientific and technical jobs (2014): 1.7 million

University/Technical university graduates (2014): 82,004/21,629

Entities conducting R&D (2014):
2.6 thousand

Proportion of world scientific papers (2014): 0.77%

Publications in indexed journals (2015):
14.3 thousand

Sources: Czech Statistical Office, SCImago Journal & Country Rank, Web of Science, CzechInvest, Ministry of Education, Youth and Sports

* Universities with official STEM focus and universities with STEM-oriented faculties are counted among technical universities



TRADITION OF EXCELLENT RESEARCH



In the Czech Republic, we are building on the outstanding accomplishments of great Czech scientists while striving toward the next ground-breaking discoveries.

Jaroslav Heyrovský's Polarography

Having furthered the field of science with his discovery and development of polarography, Jaroslav Heyrovský was awarded a Nobel Prize in 1959. The analytical method that he employed was the result of hard work and genius, as well as coincidence. After graduating from University College in London and focusing on electrochemistry, Heyrovský arrived at the Institute of Physics at Charles University to join Professor Bohumil Kučera in his experiments with mercury. In the course of analysing the surface tension of drops of mercury in 1922, it occurred to Heyrovský to measure the current passing through the mercury on electrodes and polarography was thus born.

Heyrovský defined the method as “the science of precisely reproducible curves displaying the dependency of the current intensity on the voltage during electrolysis.” Polarography became a unique way of determining the presence of chemical substances with extreme precision and was further advanced with the creation of the polarograph by Heyrovský. The method could then be used to determine not only the presence of chemical elements, but also compounds and gases in the air and even diseases such as cancer. Even though other analytical methods have since been developed, polarography still remains one of the most important game-changers in the history of chemistry.

For more information, visit www.jh-inst.cas.cz



Otto Wichterle: Inventor of Soft Contact Lens

Otto Wichterle placed himself among the great Czech scientists with his invention of the soft contact lens. He gained importance as a scientist as early as during the Second World War, when he developed Silon, an alternative material to nylon. Although he was imprisoned by the Nazi occupiers for conducting his research in secret, he later returned to academic and scientific activities. His most important work came with the research and development of hydrogels, which led to the creation of the first soft contact lens in 1957.

After proving that his lenses treat refractive errors and have considerable benefits over their hard predecessors, Wichterle dedicated himself to the technology of producing his new lenses. On Christmas Eve 1961, he developed the spin casting method with an apparatus built from his son's toy construction kit and patented the invention a few days later. Despite his later political persecution, the scientist remained actively involved in research and helped to shape the new face of Czech science after the fall of the communist regime.

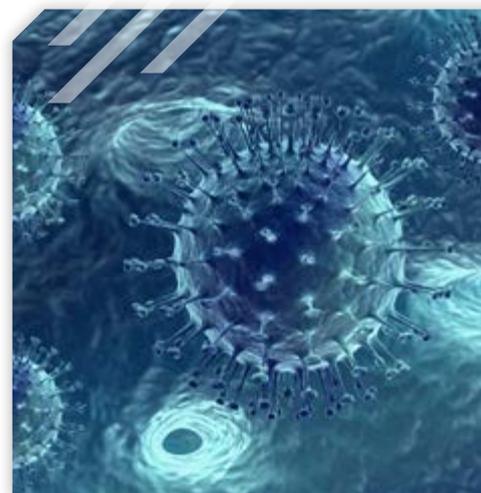
For more information, visit www.czechcentres.cz/projekty/otto-wichterle22

Antonín Holý's Successful Fight against HIV

Ninety percent of newly treated HIV-positive and AIDS patients use antiviral drugs resulting from the research conducted by Professor Antonín Holý, with 70% of current patients receiving these drugs. Professor Holý started his scientific career at the Czech Institute of Organic Chemistry and Biochemistry (IOCB) in 1960. An important moment was his meeting with the Belgian virologist Eric de Clerq of the University in Louvain in 1976. Their research of acyclic nucleotide analogues resulted in a series of very successful drugs, which are produced mainly in cooperation with the US firm Gilead Sciences.

Professor Holý's work shows that building on basic research can bring outstanding results when it combines hard work and a little bit of luck. As a consequence of Holý's research, the IOCB's R&D centre established with Gilead Sciences in Prague has seen the creation of a virtually non-toxic antiviral compound which is 500 times more effective against HIV and retroviruses than the best currently available compounds. Professor Holý's work is so significant that it has been cited more than 10,000 times, as the scientist himself has registered over 60 patents and co-authored approximately 600 scientific papers.

For more information, visit www.uochb.cz



Selected Czech Universities with Outstanding Science and R&D Programmes

Universities comprise an essential part of the R&D infrastructure in the Czech Republic. Research and development activities are mainly conducted at universities dedicated entirely to technical branches of education and at universities which have faculties with a technical focus. The following overview presents the main educational institutions active in the so-called STEMM disciplines (including science, technology, engineering, mathematics and medicine) ranging from life sciences to materials engineering and IT.

Universities with STEMM focus

Czech Technical University in Prague	www.cvut.cz
Brno University of Technology	www.vutbr.cz
VŠB - Technical University of Ostrava	www.vsb.cz
Technical University of Liberec	www.tul.cz
University of Chemistry and Technology Prague	www.vscht.cz
Czech University of Life Sciences Prague	www.czu.cz

Universities with STEMM-oriented faculties

Charles University in Prague	www.cuni.cz
Masaryk University, Brno	www.muni.cz
University of West Bohemia, Pilsen	www.zcu.cz
Palacky University, Olomouc	www.upol.cz
Tomas Bata University in Zlín	www.utb.cz
Mendel University in Brno	www.mendelu.cz
Jan Evangelista Purkyně University in Ústí nad Labem	www.ujep.cz
University of Hradec Kralové	www.uhk.cz
University of Ostrava	www.osu.eu
University of Pardubice	www.upce.cz
University of South Bohemia in České Budějovice	www.jcu.cz
University of Veterinary and Pharmaceutical Sciences Brno	www.vfu.cz
Silesian University in Opava	www.slu.cz



SCIENCE AND TECHNOLOGY PARKS

Another important component of the Czech Republic's R&D infrastructure consists of science and technology parks, where young, innovative firms cross paths with well-established companies with a shared interest in research and development. Within the context of science and technology parks, the Czech Republic supports cooperation between the research and business spheres through the operational programmes of the EU and other programmes. More than fifty science and technology parks, including incubators and innovation centres, have been established in the Czech Republic since 1994. One of the most prominent parks is the South Moravian Innovation Centre, which has laid the foundations of success of numerous innovative firms.



The South Moravian Innovation Centre

The South Moravian Innovation Centre (JIC) was founded by the Region of South Moravia, the City of Brno and four local universities in 2003 and has played an important role in the region's dynamic development ever since. The centre's main activities cover support for innovative start-up companies, connecting research and business, and support and infrastructure for mature innovative companies. The centre's portfolio of programmes includes JIC ENTER (for aspiring entrepreneurs with innovative ideas), JIC STARCUBE (an international accelerator for technological start-ups), JIC MASTER (for companies and start-ups which would like to rapidly grow and expand abroad) and JIC PLATINN (a coaching programme for owners of companies in South Moravia). The centre has also launched subsidiary JIC VENTURES. Among other things, JIC has supported over 200 technologically oriented firms and over 350 collaborations between firms and scientists. Since 2010, the centre has helped create over 1400 jobs, and it provides services to around 100 companies and projects annually. The success of JIC has also been acknowledged on the international level. In 2014, its programme for start-up companies claimed first place in the Young Entrepreneurship Competition at the European Business Network congress held in Spain. In addition, the JIC STARCUBE programme was listed in the European Accelerator Report 2014 among the top 20 most active accelerators in Europe.

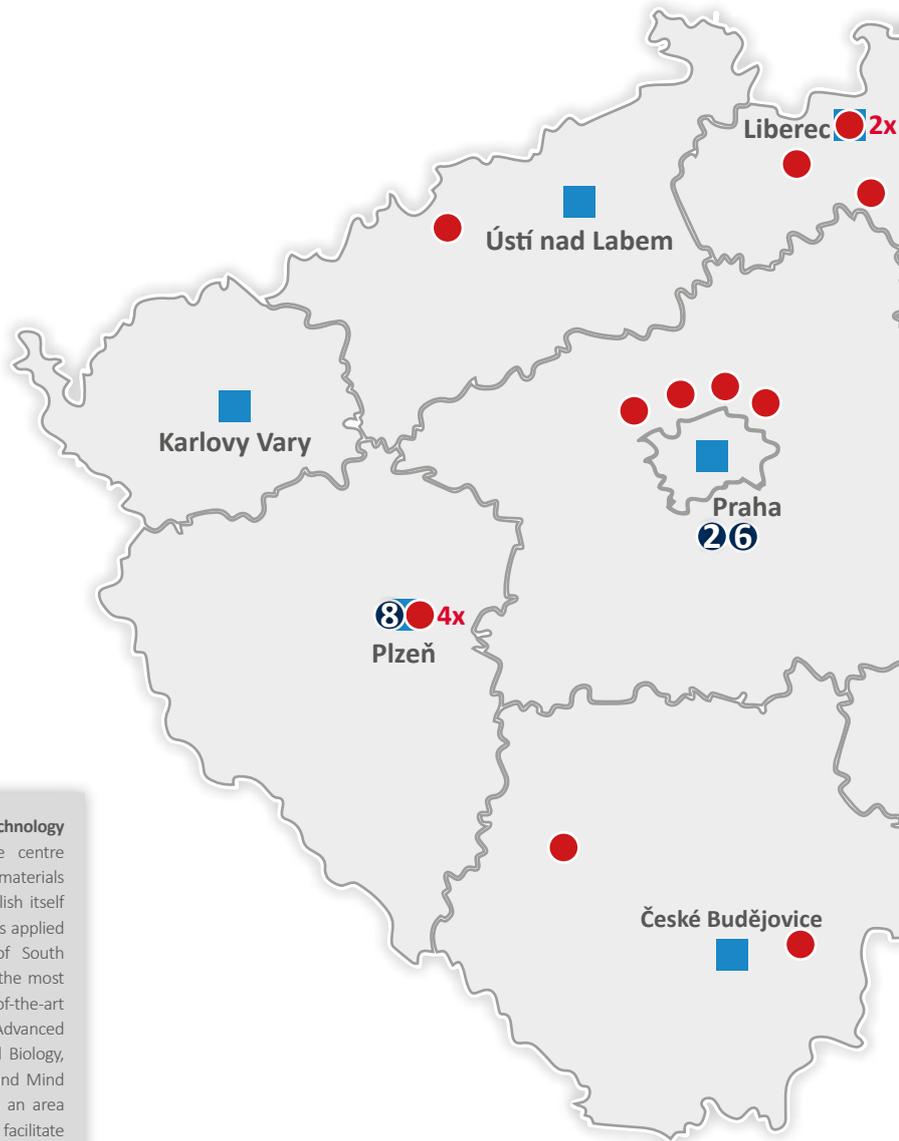
www.jic.cz

NEW RESEARCH CAPACITIES

Research Centres Financed by the Operational Programme Research and Development for Innovation

The Operational Programme Research and Development for Innovation (OPRDI) was the fourth largest operational programme aimed at fulfilling the EU regional policy objectives in the Czech Republic in the period 2007-2013. The programme's total budget of more than EUR 2.1 billion was funnelled to technical support for universities, commercialisation of R&D, technical assistance for efficient management of the programme and, above all, construction of new R&D infrastructure. Approximately two-thirds of these funds were used to construct eight large infrastructure facilities in the category of European Centres of Excellence (Priority Axis 1) and forty regional R&D centres (Priority Axis 2). The European Centres of Excellence focus mainly on international collaboration and contribution to applied results. The regional centres supported by OPRDI are also conducting exceptional research with a strong connection to the application sphere and thus help to strengthen the competitiveness of their respective regions. The programme as a whole has reached its sustainability phase and has already contributed to the creation of world-class R&D results, such as the world's most powerful laser.

For more information, visit www.opvavpi.cz



The Central European Institute of Technology (CEITEC) is a multidisciplinary science centre focused on life sciences and advanced materials and technologies whose aim is to establish itself as a recognised centre for basic as well as applied research. Supported by the Region of South

Moravia and the City of Brno, it is a consortium whose partners include the most prominent universities and research institutes in Brno. CEITEC offers state-of-the-art infrastructure for research divided into 61 groups and seven programmes: Advanced Nanotechnologies and Microtechnologies, Advanced Materials, Structural Biology, Genomics and Proteomics of Plant Systems, Molecular Medicine, Brain and Mind Research, and Molecular Veterinary Medicine. Modern laboratories with an area of 25,000 m² grew in Brno. The advanced technologies in use at CEITEC facilitate synergistic study in life and material sciences at all levels of complexity, from individual atoms, through molecules, molecule groups and cells to whole organisms. Ten core facilities enable specialised research, attainment of higher levels of expertise, higher-quality facilities for advanced education and mainly close, multidisciplinary cooperation.

www.ceitec.cz



The Centre of Excellence Telč (Institute of Theoretical and Applied Mechanics CAS) has been established for research on historic and other materials and structures. In particular, it is equipped with a unique infrastructure specially designed and manufactured with a view to

obtaining fundamental knowledge and verifying the application and innovation potential of newly-developed technologies in the areas of diagnostics, lifecycle extension, preventive protection and conservation, including long-term sustainable use of the existing building stock and technical materials.

cet.arcchip.cz



Extreme Light Infrastructure (ELI) is part of a new generation of large European research facilities with the main goal of creating laser equipment with unique parameters. ELI's research projects will cover the interaction of light with matter at an intensity level ten times higher than current

achievable values. The ELI Beamlines facility in the Czech Republic will provide ultra-short laser pulses of a few femtoseconds duration with peak power up to 10 PW. ELI Beamlines will create a portfolio of unique secondary sources covering photons in a broad spectrum of wavelengths as well as accelerated electrons, protons and ions for interdisciplinary applications in physics, medicine, biology and materials science. Specific applications are in cancer treatment, 3D diagnostic methods and material structures, among other areas. These state-of-the-art sources will be driven by ultra-intense lasers with the possibility of synchronising them in unique combinations with near-absolute precision. Two other centres will be set up in Hungary (ELI Attosecond – ultra-short optical pulses) and Romania (ELI Nuclear Physics – photonuclear physics).

www.eli-beams.eu

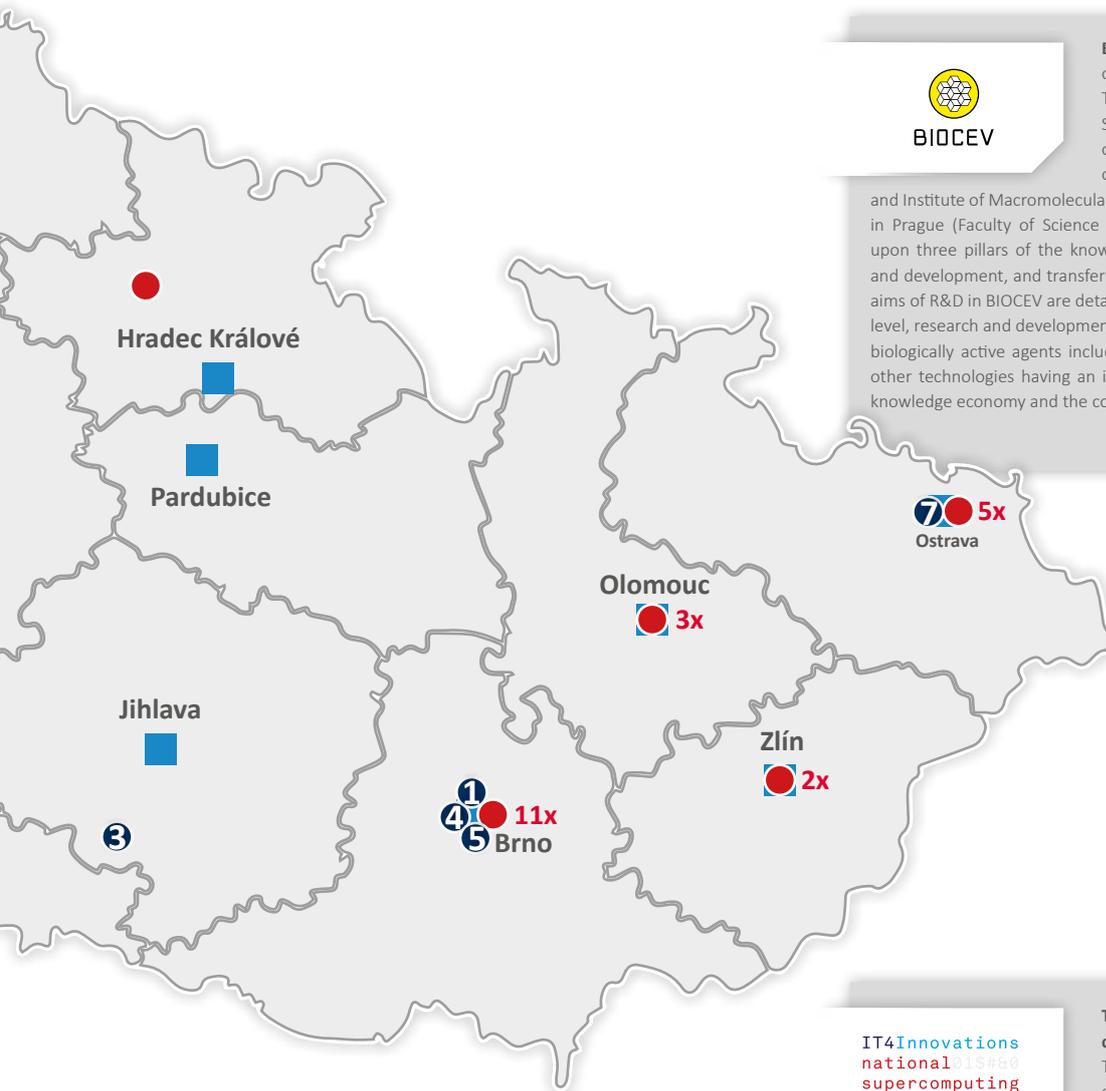


CzechGlobe - Global Change Research Institute of the Czech Academy of Sciences is a public

research institution and European Centre of Excellence investigating the ongoing global climate change and its impact on the atmosphere, biosphere and human society through the use of the latest techniques and instrumentation. The research focuses primarily on the development of the climate and its future scenarios, the carbon cycle and the effects of changing conditions on the production and biodiversity of ecosystems and on the impacts on the future development and behaviour of our society.

www.czechglobe.cz

NEW RESEARCH CAPACITIES



- Cities
- Regional centres
- European Centres of Excellence



BIOCEV

BIOCEV is a biotechnology and biomedicine centre of the Academy of Sciences and Charles University. There are six partner institutes of the Academy of Sciences (Institute of Molecular Genetics, Institute of Biotechnology, Institute of Microbiology, Institute of Physiology, Institute of Experimental Medicine, and Institute of Macromolecular Chemistry) and two faculties of Charles University in Prague (Faculty of Science and 1st Faculty of Medicine). The Centre builds upon three pillars of the knowledge triangle: teaching and education, research and development, and transfer of research results into practice. Among the main aims of R&D in BIOCEV are detailed study of cellular mechanisms at the molecular level, research and development of novel therapeutic strategies, early diagnostics, biologically active agents including chemotherapeutics, protein engineering and other technologies having an impact on the quality of life, development of the knowledge economy and the competitiveness of the Czech Republic.

www.biocev.eu



IT4Innovations national supercomputing center

The **IT4Innovations national supercomputing center** is a research institute at the VŠB - Technical University of Ostrava. IT4Innovations conducts research and provides state-of-the-art technologies and services in the fields of high performance computing and embedded systems.

Since June 2013, IT4Innovations operates the supercomputer Anselm, with performance of 94 TFLOPS (Rpeak). The main system, the supercomputer Salomon, with performance 2 PFLOPS (Rpeak) was put into operation in June 2015. This supercomputer ranked among the 50 most powerful supercomputers in the world and is the largest Intel(r) Xeon Phi(tm) coprocessor-based cluster in Europe. Since 2011, IT4Innovations has been a member of the prestigious Partnership for Advanced Computing in Europe (PRACE) research infrastructure.

www.it4i.cz



The **International Clinical Research Center of St. Anne's University Hospital Brno (FNUSA-ICRC)** is a new-generation science and research centre focusing on finding new methods, technologies and medicines for effective prevention, early diagnostics and individualised

treatment of cardiovascular and neurological diseases. The centre is based on the hospital's successful, long-term cooperation with Mayo Clinic (USA) and other partners both in the Czech Republic and abroad.

Areas of research at the FNUSA-ICRC include cardiovascular and transplant surgery, heart-failure treatment and transplant programmes, interventional cardiology and acute coronary syndromes, cardiac and central nervous system electrophysiology and pacing, cardiovascular and metabolic disorders, development of new methods and interventions to reduce risk factors, tissue engineering in cardiovascular research, cerebrovascular disease research, neuroepidemiology and several research platforms.

www.fnusa-icrc.org



NTIS - New Technologies for the Information Society

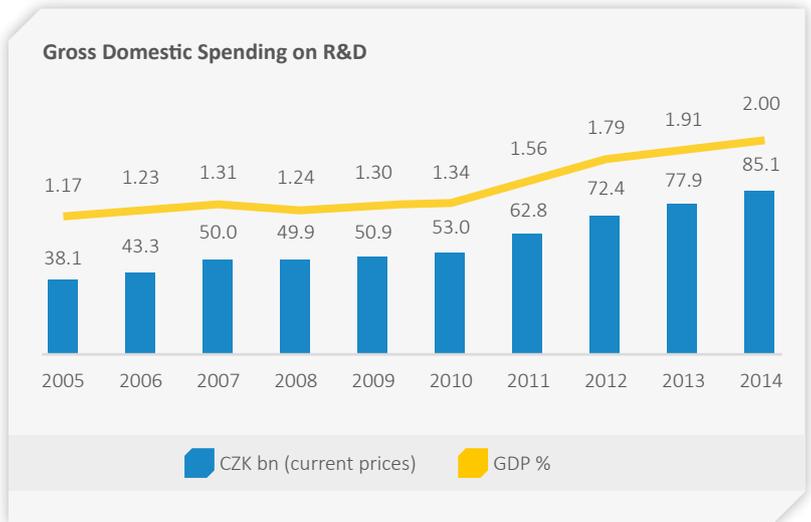
is a modern research centre of the Faculty of Applied Sciences of the University of West Bohemia in Pilsen. The mission of the NTIS Centre is research, development and innovation in the priority areas of the information society and materials research. The centre's activities are focused on development of cybernetic and mechanical systems, and information and bio-engineering technologies. Its activities also involve research and development of new thin-film materials and plasma sources, processing of geo-spatial data and development of mathematical structures designed to support mathematical models of explored systems and processes. The NTIS Centre also supports competitiveness of the national and regional industry through technology transfer and cooperation with the application sphere.

www.ntis.zcu.cz

R&D FUNDING IN THE CZECH REPUBLIC

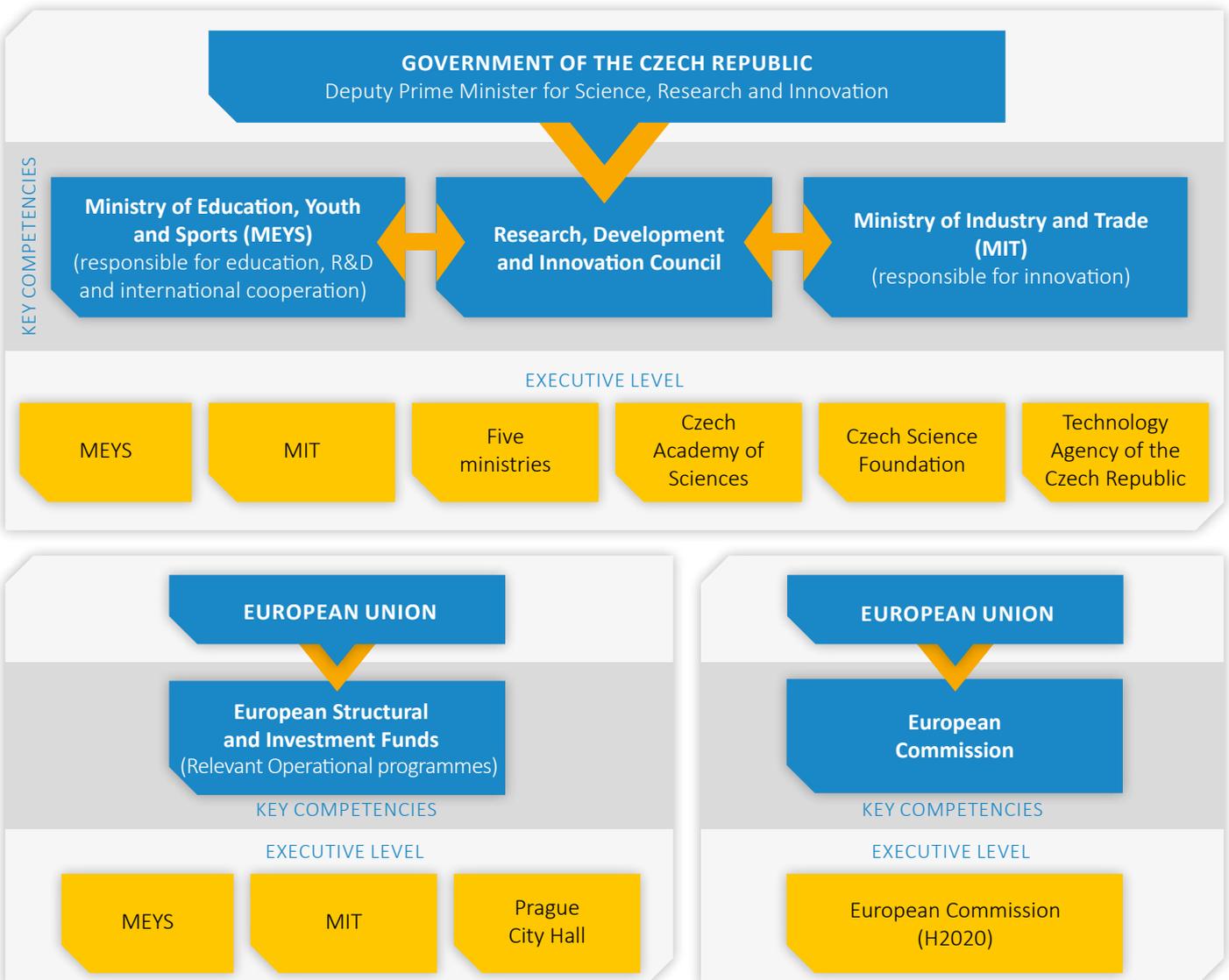
Introduction

Czech R&D is not driven only by the country's history of excellent science, but also by extensive state support. Financial aid comes from national and European resources and is administered by a number of mostly national institutions (Czech Science Foundation, Technology Agency of the Czech Republic, seven Czech ministries; with the exception of Horizon 2020). The main forms are target-oriented funding (mostly as grants, assigned in the form of subsidies and loans) and institutional funding (which mostly supports institutions and their development, but also includes indirect support in the form of tax deduction of R&D-related costs).



Source: Czech Statistical Office 2015

Financial Aid System



Source: TA CR, altered by CzechInvest

R&D FUNDING IN THE CZECH REPUBLIC

Czech Science Foundation



The Czech Science Foundation (also known as the Grant Agency of the Czech Republic, GA CR) was established in 1993 as the main independent public organisation with the aim to support basic research in the Czech

Republic and promote international collaboration of researchers and research teams on the bilateral and multilateral levels. On the basis of calls for proposals, the Czech Science Foundation provides financial support for experienced as well as young and early-stage researchers. Moreover, it funds bilateral projects together with projects carried out within international research programmes. The subject of a project proposal is determined by the applicant (bottom-up principle). Around 2,500 project proposals are submitted to the GA CR every year, of which roughly one-fourth obtain financial support. The GA CR invites proposals in all disciplines of basic research. The structure of support is divided into five domains: technical sciences, physical sciences, medical and biological sciences, social sciences and humanities, and agricultural and biological-environmental sciences. The main goals of the foundation include support of basic research with strong potential for world-class results, international scientific cooperation in basic research, professional development of early-stage researchers and effective use of funds.

For more information, visit www.gacr.cz



Technology Agency of the Czech Republic

T A
Č R

The Technology Agency of the Czech Republic (TA CR) is a state organisation that supports and finances applied research and experimental development. It was founded in 2009 and its initial funds were distributed

about two years later. The task of the TA CR is to concentrate support for applied research in one place and facilitate the commercialisation of research results in practice. TA CR administers 9 programmes which assist in the process of introducing the results of research to the market, while others focus on promoting research activities in the field of social sciences and on international collaboration. All of the supported projects must result in practically usable outputs. In addition to direct funding of applied research, the TA CR also provides advice to the supported institutions, especially legal and financial advice and in the field of intellectual-property protection. It also collaborates with similar organisations abroad. By the end of 2015, the TA CR had supported 1,487 projects and distributed more than CZK 17.7 billion from the state budget. Within these projects, private companies received assistance over 1,800 times and research organizations almost 1,900 times. As a result, accurate satellite guidance systems for trains, water and air purification using nanoparticles, inoculation of plants enabling them to live in nutrient-poor soils and many other results useful for society are currently being developed in the Czech Republic.

For more information, visit www.tacr.cz

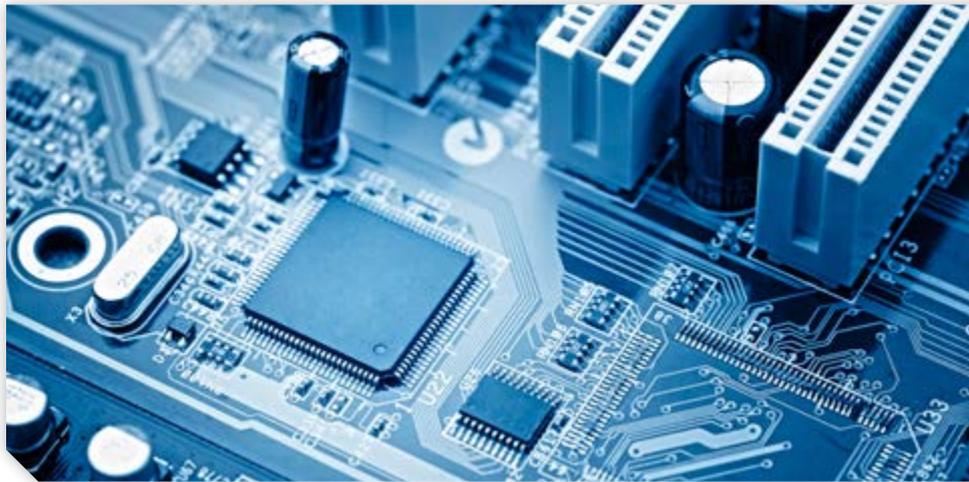
Selected Programmes of R&D Funding in the Czech Republic

Programme	Activities supported	Beneficiary	Basic conditions	Amount of contribution/grant
NATIONAL FUNDS ADMINISTERED BY NATIONAL INSTITUTIONS				
Czech Science Foundation www.gacr.cz	Support for and launching of public tenders in R&D to support basic research grant projects	Legal entities and individuals, research organisations	Objectives and methods of addressing are determined by those who propose projects and are responsible for them.	Subsidies up to 100%
Delta Programme Technology Agency of the Czech Republic www.tacr.cz	Support of collaboration in applied research and experimental development projects through joint projects of enterprises and research organisations supported by the Technology Agency of the Czech Republic and major foreign technology and innovation agencies	Research organisations and enterprises	At least one international candidate (only for a specific country within the current call) and at least one candidate from the Czech Republic (an enterprise). A research organisation from the Czech Republic may be an applicant only if there is at least one enterprise from the Czech Republic among the other project participants.	Up to 100% while respecting the highest possible support rate per project, which will be set ad hoc for each public call
Gama Programme Technology Agency of the Czech Republic www.tacr.cz	Support of the verification of the results of applied research and experimental development in terms of their practical application and preparation of their subsequent commercial use	Research organisations and enterprises	The supported project must lead at least to one of the following results: patent, technically executed results (prototypes, functional samples), pilot plant of verified technology, software, industrial and utility models	Subsidies for research organisations: 90%. Subsidies for enterprises: amounts vary based on the criteria – from 35% to 80%
Epsilon Programme Technology Agency of the Czech Republic www.tacr.cz	Support of projects whose results have strong potential for rapid application in new products, production processes and services	Research organisations and enterprises	Results have to have strong potential for rapid application in production processes of new products, particularly in the priority areas: competitive knowledge-based economy, sustainability of energy and material resources, and the environment for quality of life	Subsidies up to 60%
Omega Programme Technology Agency of the Czech Republic www.tacr.cz	Support of research activities in the area of applied social sciences and application of the results thereof to increase the competitiveness of the Czech Republic, enhance the quality of life of its inhabitants and balance socio-economic development	Research organisations and enterprises	Projects must culminate with at least one of the supported results, which must be actually applied in practice (certified methodologies and practices, software, results promulgated into legislation, research reports, etc.)	Subsidies between 25% and 100% depending on the criteria
TRIO Programme Ministry of Industry and Trade of the Czech Republic http://www.mpo.cz/dokument160144.html	The objective of this programme is to develop the potential of the Czech Republic in the area of the key enabling technologies (KETs), such as photonics, micro- and nanoelectronics, nanotechnology, industrial biotechnology, advanced materials and advanced manufacturing technologies.	Subsidy applicants can only be enterprises (legal entities and natural persons) that undertake projects in effective cooperation with at least one research institution.	Projects must be expected to culminate with at least one of the supported results (industrial design, prototype, patent, software, proven technology, etc.), they have to fall under the specified KETs sectors, and include cooperation between an enterprise and a research organisation.	Subsidies for research organisations: up to 100%, limit of CZK 20 million per project. Subsidies for enterprises: up to 80%, limit of CZK 20 million per project
Inter-Excellence Ministry of Education, Youth and Sports <i>*In preparation for 2017 – for updates, please check http://www.msmt.cz</i>	International cooperation in R&D. The programme should provide efficient umbrella management of previous relevant programmes by the MEYS (Eurpro II, Ingo II, Eureka CZ, Kontakt II, COST CZ, GESHER/MOST)	Research organisations, enterprises – the type of recipient specifically depends on each particular area of the programme	To be announced; for updates, please check http://www.msmt.cz.	Up to 100% depending on the area of support.
EUROPEAN FUNDS ADMINISTERED BY NATIONAL INSTITUTIONS – OPERATIONAL PROGRAMMES				
OP Enterprise and Innovation for Competitiveness Ministry of Industry and Trade of the Czech Republic http://www.czechinvest.org/en/operational-programme-entrepreneurship-and-innovations-for-competitiveness	The programme puts emphasis on the knowledge-based economy, cooperation between the R&D sphere and innovative firms and the use of new forms of support.	Research organisations and enterprises	Support will be provided in compliance with individual state aid rules (Regional State Aid Rules, GBER, Framework for State Aid for RDI, de minimis aid).	Subsidies depend on the type of project – from 25% to 100%
OP Research, Development and Education Ministry of Education, Youth and Sports http://www.msmt.cz/strukturalni-fondy-1/aktualni-informace-op-vv?lang=1	The objective is to shift the Czech Republic towards an economy based on an educated, motivated and creative workforce and to produce high-quality research results and use them for enhancing the competitiveness of the Czech Republic.	Research organisations and enterprises	For more information, please visit http://www.msmt.cz/strukturalni-fondy-1/aktualni-informace-op-vv?lang=1	Subsidies depend on the type of project
OP Prague the Growth Pole Prague City Hall http://www.prahafondy.eu/cz/opprr.html	The programme is aimed at the enhancement of research, technological development and innovation, sustainable mobility and energy savings, promoting social inclusion and combating poverty, education and intelligence and promoting employment.	Research organisations, enterprises, city governments and organisations founded thereby, NGOs, professional and interest groups	For more information, please visit http://www.prahafondy.eu/cz/opprr.html	Subsidies depend on the type of project
EUROPEAN FUNDS ADMINISTERED BY EUROPEAN INSTITUTIONS				
Horizon 2020 The EU Framework Programme for Research and Innovation https://ec.europa.eu/programmes/horizon2020/	The financial instrument aims at strengthening the EU's position in science, innovation and R&D and tackling societal challenges by helping to bridge the gap between research and the market. The programme is running from 2014 till 2020.	Those eligible for funding may be (a) any legal entity established in an EU member state or associated country, or created under Union law; (b) any international European interest organisation; (c) any legal entity established in a third country identified in the work programme.	The following minimum conditions apply for grants: (a) at least three legal entities participate in the given action; (b) the three legal entities are each established in a different member state or associated country; and (c) the three legal entities referred to in point (b) are independent of each other. The requirement of three entities does not apply in certain cases.	Funding depends on the respective R&D support programme

SELECTED EXAMPLES OF CZECH R&D

Introduction

 Czech academics and entrepreneurs have been successfully exploiting new ideas for generations. Today, Czech firms and research organisations are widely recognized for their world-class research and development. Along with the previously mentioned research centres, we would like to present examples of these outstanding companies and institutions which form a matrix of Czech R&D that excels across sectors.



IT

Czech Institute of Informatics, Robotics, and Cybernetics



The Czech Technical University in Prague (CTU) founded the Czech Institute of Informatics, Robotics and Cybernetics (CIIRC) in July 2013. The institute's purpose is to effectively integrate research in computer science, robotics and cybernetics within CTU, especially research in the fields of intelligent, distributed and complex systems, automatic control, computer-aided manufacturing, bioinformatics, biomedicine and assistive technologies, while also raising the level of the existing cooperation between CTU, the Academy of Sciences of the Czech Republic and the most important universities in the Czech Republic and abroad. The aim is to create a motivating environment for the support of business and innovation activities of students and researchers by employing the latest knowledge and experience of technology transfer in the world's top incubators (Silicon Valley, Cambridge, Oxford, Israel, Singapore). CIIRC will also offer suitable facilities for the presence of global companies and create conditions for long-term co-funding of research conducted by major international companies, many of which (Siemens, Rockwell Automation, and Eaton, among others) have already expressed interest in being present in CIIRC.

www.ciirc.cvut.cz

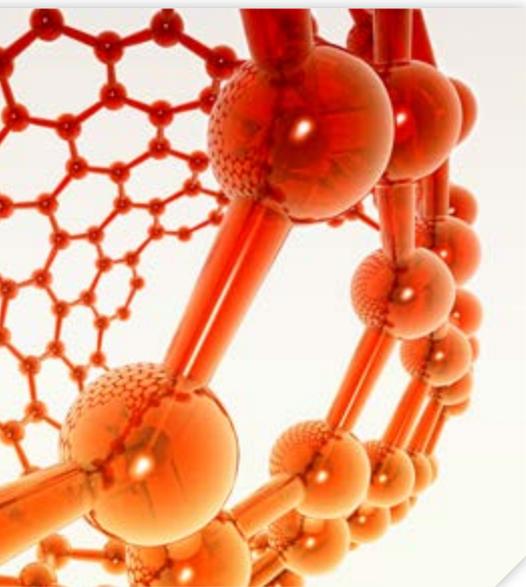
Avast Software



Avast Software, maker of the most trusted mobile and PC security solutions in the world, protects 230 million people and businesses with its security applications. In business for more than 25 years, Avast is a pioneer in the computer security business, with a portfolio that ranges from free antivirus applications for PC, Mac and Android to premium suites and services for both consumers and businesses. In addition to being top-ranked by consumers on popular download portals worldwide, Avast is certified by, among others, VB100, AV-Comparatives, AV-Test, OPSWAT, ICSA Labs and West Coast Labs. Avast's roots go back to 1988, when Czech researchers Eduard Kučera and Pavel Baudiš encountered the Vienna Virus and began their quest to save the world's computers from it and others like it. Today, Avast employs more than 650 professionals at its headquarters in Prague, Czech Republic, and has branches in Germany, the United States and Asia, as well as distribution partners in all markets around the world and a global community of Avast enthusiasts.

www.avast.com





Institute for Nanomaterials, Advanced Technologies and Innovation



The Technical University of Liberec and its Faculty of Textile Engineering have become well known due to their international patent for the industrial production of nanofibres commercialised as Nanospider™ by Elmarco. This was also an important impetus for the establishment of the Institute for Nanomaterials, Advanced

Technologies and Innovation (Cxl). Cxl is involved in competitive engineering with the main goal of long-term support for industrial research activities focused on the development and manufacture of machinery and vehicles, mechatronics, robotics, management and utilisation of artificial intelligence and the use of new technologies and technological methods in production. Materials research within Cxl is presently focused on the physics involved in nanomaterial creation and electrostatic spinning. The application of nanofibre materials has been developed in a number of areas, e.g. air and fluid filtration, sound-absorbing materials, open-wound bandages and other medical materials, materials for remediation processes, and nanosurfaces and nanofiber materials for implants and tissue engineering.

www.tul.cz

CRYTUR



CRYTUR is one of the world's leading companies engaged in crystal manufacturing and processing with a strong focus on materials research and development of crystal-based applications.

CRYTUR is continuing the tradition of growing and processing crystals dating back to 1935. In recent decades, CRYTUR has gained worldwide recognition as a provider of integrated crystal-based solutions for science and industry. Synthetic crystals grown in the company's modern 4,500 m² facility originate in a strictly controlled environment and have to be precisely tuned to gain the desired physical characteristics which make it possible for them to be used as components in a wide variety of crystal-based detectors and devices. Artificial garnets and perovskites are the key component of unique solutions provided by CRYTUR, such as precise detectors for electron microscopy, high-resolution imaging systems or light converters for LEDs.

www.crytur.cz



Contipro



Contipro has been involved in research, development and biotechnological production of active ingredients for the cosmetics and pharmaceutical industries for over twenty-five years. With excellent production quality and research facilities, Contipro is one of the world's leading manufacturers of hyaluronic acid and applications thereof. The company places strong emphasis on research with 16 research teams and almost 40% of its employees involved in R&D. One of the latest achievements of the company's scientists is the development of 4SPIN, the first desktop device for laboratory and small-scale production of nanofibres, designed to influence the final arrangement of fibres in layers. It is targeted at laboratories engaged in research and development of new nano-applications from biopolymers.

www.contipro.cz



Institute of Organic Chemistry and Biochemistry



The principal activity of the Institute of Organic Chemistry and Biochemistry (IOCB) is scientific research in the fields of organic chemistry, biochemistry, molecular and cellular biology, chemistry of natural substances and computational chemistry. Research is focused on basic science, but the Institute has always stressed the possibility of using scientific results to improve the human life. A considerable part of the research is represented by medicinal chemistry. This research is focused on unmet medical needs, including for example viral diseases, cancer, diabetes, inflammatory and neurodegenerative diseases. An important feature is the interdisciplinarity of research, combining organic chemistry, biology and computational chemistry. This approach proved to be successful in the past, which can be represented by more than a dozen of drugs on the market, based on original discoveries by the IOCB scientists. The principal task is nevertheless to conduct high-quality basic research, which is reflected by a growing number of high-impact publications as well as fast increasing citations of publications produced by the IOCB. The IOCB's exceptional scientific results led Gilead Sciences to set up its only research centre outside of the US in Prague in cooperation with the IOCB.

www.uochb.cz

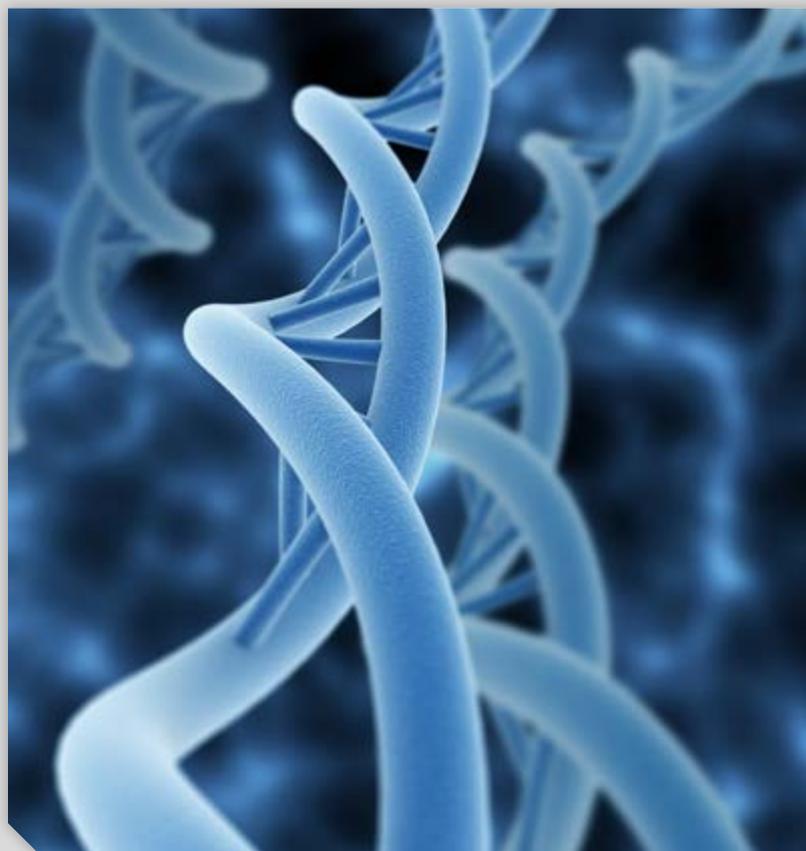
Institute of Molecular and Translational Medicine



The Institute of Molecular and Translational Medicine (IMTM) at the Faculty of Medicine and Dentistry, Palacký University in Olomouc, was established in 2010 within an

infrastructural project initiated by the Palacký University in close cooperation with the University Hospital in Olomouc, the Institute of Chemical Technology and the Institute of Organic Chemistry and Biochemistry of the Academy of Sciences of the Czech Republic in Prague. The research conducted at IMTM is focused on better understanding of human diseases and development of future medicines and diagnostics. IMTM's research is organised in six research programmes that integrate activities across individual departments/laboratories and research groups: Molecular Basis of Disease, Medicinal Chemistry, Chemical Biology and Experimental Therapeutics, Biomarkers – Identification and Validation, Pharmacology and Toxicology, and Translational Medicine. Furthermore, research at the Laboratory of Experimental Medicine focuses on human disease, development of innovative therapeutics, biomarkers and in vitro/in vivo diagnostics. The Genome Integrity Laboratory conducts research focused on various mechanistic aspects of the DNA damage response and DNA repair pathways.

www.imtm.cz





LINET



LINET spol. s r.o. is a major European manufacturer of hospital and nursing beds. The company's portfolio includes solutions designed for intensive care, products for regular in-bed treatment and special beds for retirement homes and long-term care facilities. The LINET range also includes a wide range of accessories such as anti-pressure-ulcer mattresses, mobile equipment and healthcare furniture. The firm regularly introduces products and services with innovative features and functions that reduce the physical demands placed on caregivers, enhance the efficacy of provided care and increase patient comfort. LINET works intensively on developing such products in collaboration with healthcare professionals and respected experts in various scientific fields, enabling the firm to keep abreast of new trends in the area of medical care. The Linet plant in Želečice u Slaného manufactures approximately 40,000 hospital beds per year, the vast majority of which are intended for export to more than one hundred countries worldwide. LINET has roughly 900 employees. Since 2011, LINET s.r.o. has been a division of the multinational holding company LINET Group SE based in the Netherlands.

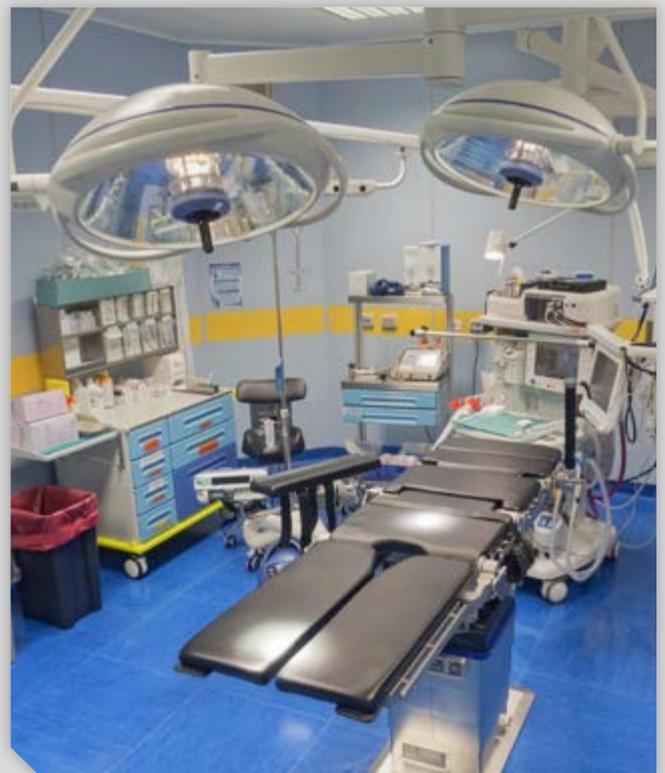
www.linnet.com

ELLA-CS



This company was established in 1991 as a specialised manufacturer of medical devices. Its roots date back to manufacturing activities commenced in 1986 at the Faculty of Medicine of Charles University in Hradec Králové and the export of special thermocouple probes for radiotherapy developed at the Institute of Experimental Oncology. The company's current portfolio is focused on stents for the gastrointestinal tract and biliary ducts, vena cava filters, ophthalmic implants, etc. The company's main efforts are directed toward research and development of its own original products in close cooperation with renowned clinics. The company has currently several unique products which are without parallel in the world, including a biodegradable stent for the oesophagus, which has also recently been used in new applications in the gastrointestinal tract, biliary ducts and airways. Another unique product in the company's portfolio is a stent for stopping variceal bleeding with innovative implantation and extraction methods.

www.ellacs.eu



Electronics



TESCAN ORSAY HOLDING



TESCAN ORSAY HOLDING is a multinational company established through the merger of the Czech company Tescan, a leading global supplier of scanning electron microscopes (SEMs) and focused ion beam workstations, and the French company Orsay Physics, a world leader in customized focused ion-beam and electron-beam technology. Over the course of more than twenty-five years of existence, the Tescan brand has built a formidable reputation for developing and manufacturing scanning electron microscopes and system solutions for micro- and nanotechnology and related applications. Tescan's product range meets customers' requirements at all levels in diverse fields of science and industry such as materials science, life sciences, forensic sciences, earth sciences and the semiconductor and microelectronics industry. Over 2000 SEMs installed in more than 75 countries are a testament to Tescan's first-class quality and proven technology. Tescan's portfolio includes thermal emission and field emission SEMs. Along with this, Tescan also produces Ga and Xe plasma source dual beam FIB-SEM systems, dedicated solutions for special applications, a newly developed multimodal holographic microscope, as well as a range of detection systems and tailored solutions for specific analytical needs.

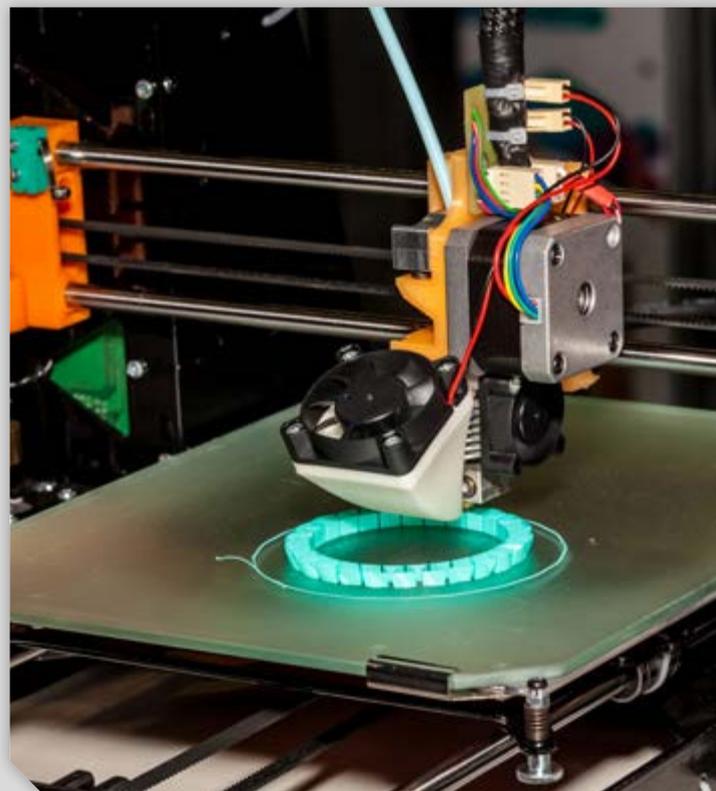
www.tescan.com

Y Soft



With its headquarters in Brno, Czech Republic, and offices around the world (including Asia, Australia, Middle East, the United States and multiple locations in Europe), Y Soft Corporation employs over 300 experienced professionals worldwide, 42% of which work in R&D. Annual double-digit revenue growth has become a tradition at Y Soft. Over 90% of the company's revenue is generated abroad. Y Soft is also active in accelerating technology growth. The company's main product is the YSoft SafeQ print management solution, which demonstrably reduces costs, streamlines workflows and increases document security. The solution allows authentication, print roaming, rule-based printing, mobile printing, scan management and automated workflows, credit, billing and reporting. Globally, over 14,000 leading Fortune 1,000 and SMB organisations use YSoft SafeQ in more than 120 countries. Furthermore, the company developed YSoft be3D printers, which are a reliable and affordable way to simplify the manufacturing creation of prototypes and components and to deploy 3D printing technology in educational environment for the manufacturing and education markets. Also, in addition to Y Soft Ventures, the venture arm of Y Soft that provides to promising start-ups in Central Europe the capital, resources and expertise needed to accelerate their path to global markets, Y Soft contributes its time, talent and resources to universities and tech forums.

www.ysoft.com



Aerospace



ERA



ERA a.s. (a member of Omnipol holding) is a pioneer and leading supplier of next-generation surveillance and flight tracking solutions for the air traffic management, military, security and airport operations markets. As one of the developers of the respected technologies of multilateration and ADS-B and thanks to the company's traditional products, ERA has 100 installations at aerodromes, air traffic control centres and military organisations in 57 countries in Europe, the Middle East, Africa, the Americas and Asia. For over half a century, ERA has been building a proud heritage of delivering MLAT-based solutions such as wide-area multilateration and surface surveillance solutions to air traffic controllers. Apart from systems for the civil sector, ERA developed the unique VERA-NG passive radiolocation system, an essential part of any modern defence surveillance network and advanced border protection.

www.era.cz

Aerospace Research and Test Establishment



The Aerospace Research and Test Establishment (referred to by its Czech initials, VZLÚ) is a national centre for research, development and testing in the field of aeronautics and space. The main mission of VZLÚ is to generate new knowledge and transfer it into industrial practice, as well as to provide its partners with maximum support in the development of new products. As a multi-discipline research organisation, VZLÚ exploits synergic effects and also contributes to the progress of the automotive, rail, defence, security and power industries and civil engineering. VZLÚ supports a wide range of disciplines necessary for the development of products related to the aviation industry. Activities in this area comprise aerodynamic design, CFD calculations, flow simulations, flight dynamics and complex testing of aircraft in wind tunnels. VZLÚ is also one of the pioneers for space research in the Czech Republic and develops scientific instruments for space experiments and surveying. Main engineering services provided for space sector include stress analysis, thermodynamic simulations, thermal analysis, reliability analysis, design and development of electronic systems. VZLÚ uses its expertise in the field of aerodynamics for the development of unmanned aerial vehicles (UAVs) and propellers, and provides a wide variety of research, development and testing for aircraft turbine engine producers.

www.vzlu.cz



Automotive Industry



BRANO GROUP



BRANO GROUP a.s. is a robust European firm and a developmental partner for the automotive industry, which supplies clients worldwide with its products. BRANO GROUP currently includes twelve companies and sixteen plants in multiple countries. The company employs around 160 development engineers. It focuses on high-quality electromechanical products, particularly products for the automobile industry, locking systems, handling equipment and small castings. BRANO GROUP's portfolio includes seat latches, side door parts (door latches, door strikers, side door hinges), rear bonnet parts (rear bonnet latches, rear bonnet strikers, soft touch openings, rear bonnet hinges), front bonnet parts (front bonnet latches, front bonnet hinges), door closers, lifting devices, car heaters (water heaters, stand-alone heaters), shock absorbers, manual brake levers, car jacks and bifunctional headlights.

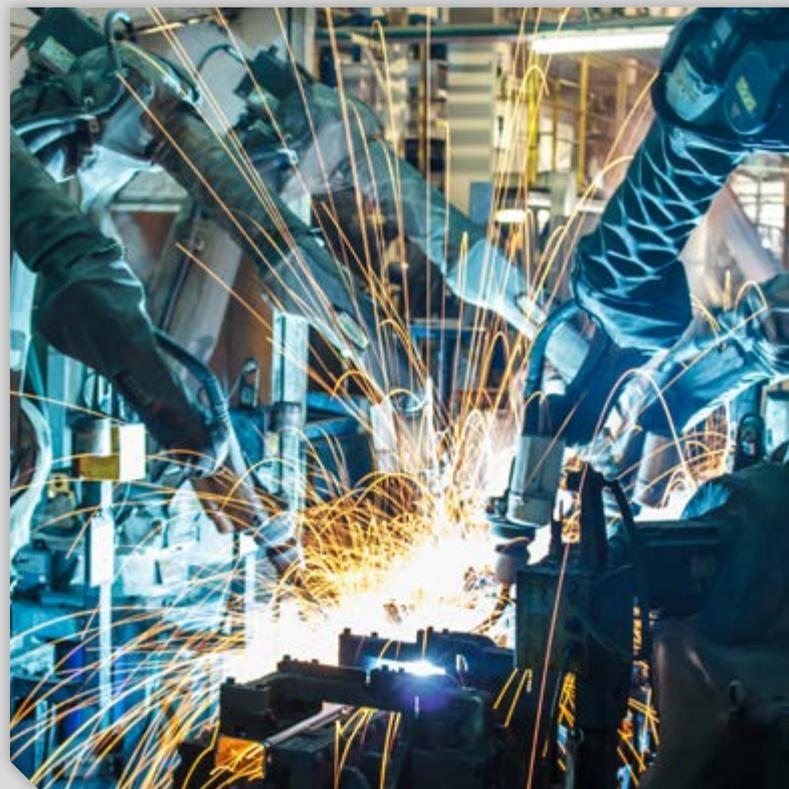
www.brano.eu

VÚTS



VÚTS focuses on research, development and production of machinery for the manufacturing industry, particularly in the fields of machine tools, printing, food processing, packaging and medical equipment. Furthermore, VÚTS is involved in automation, development, design and production of special single-purpose machines, manipulators, conveyors and test equipment, especially for suppliers in the automotive industry. VÚTS's activity is characterised by its offer of a comprehensive set of services ranging from research, development and design to complete implementation of technology VÚTS has its own mechanical workshop in which it is able to carry out all conventional machining operations for both its own production and custom manufacturing. R&D activities include methods and apparatuses for measuring technical parameters of machinery and equipment, mechatronic systems for controlling and driving working elements of mechanisms and machines, mathematical modelling of properties and behaviour of machine units including their interaction with their surroundings, methods and procedures in designing machinery and equipment for the manufacturing industry and designs for special textile applications.

www.vuts.cz





ÚJV Řež



For over sixty years, ÚJV Řež, a. s. (previously NRI- Nuclear Research Institute Řež) has represented one of the best state of the art workplaces in the energy industry in the Czech Republic. ÚJV Řež provides comprehensive services primarily in the fields of applied research, development, and innovation in the utilization of nuclear energy and ionizing radiation sources. The company's services cover safety, reliability and efficiency support for nuclear and conventional power plant operations as well as heating stations. Furthermore, the company specializes in the construction design, engineering, fuel cycle chemistry and complex services for radioactive waste management. ÚJV Řež is the only company in the Czech Republic to offer certified disposal of institutional waste from hospitals and industry. The company is also a leader in the regional distribution and production of radiopharmaceuticals, primarily for PET (positron emission tomography). ÚJV Řež ranks among the leading research centres of Europe and is involved in a number of technology platforms within supranational structures. The company is a member of the ÚJV Group and it has long been participating in dozens of foreign projects both within the EU as well as in America, Asia and Eastern Europe.

www.ujv.cz

ČKD Blansko Engineering

ČKD Blansko Engineering
člen skupiny LITOSTRŽELPOWER

ČKD Blansko Engineering is an engineering-supply company whose main area of activities consists of complete deliveries of mechanical equipment and technology for hydropower plants and pump stations – hydraulic turbines of all types and sizes, pump turbines and pumps including outline and detail design documentation, hydraulic design, model tests, erection, and guarantee measurements on site. ČKD Blansko Engineering is focused not only on supplying new equipment, but also on refurbishment, uprating and overhauls of existing machines. Great emphasis is placed on high-quality hydraulic and mechanical design of the company's machines in accordance with the latest global trends. State-of-the-art CFD and FEA computation methods are applied to optimise particular components and complete hydraulic machines to ensure high efficiency and long service life without any operational problems. Modern, cavitation-proof and environmentally friendly materials are applied in machine design.

www.cbe.eu



Wikov Industry



Wikov has been active in mechanical engineering for over 130 years. Wikov produces a broad assortment of industrial gearboxes for use in, for example, hydro, wind, coal and tidal power plants, transmission equipment for rail vehicles, ships, the cement and mining industry and the oil and gas industry. The company's outstanding products include high-speed gearboxes, the WiGuard online monitoring system, innovative Side Drives for cement mills and dynamic test rig for rail-vehicle gearboxes. Significant and continuous investments in production and measuring technology, a strong team of highly skilled specialists and technological know-how are the main pillars of Wikov's success. In recent years, the company has been intensively developing a strong R&D team focused on innovation. The company has invested nearly USD 100 million in the latest machine tools in the past five years, as well as in research, development and testing of gearboxes.

www.wikov.com



...for information on more outstanding R&D entities in the Czech Republic, please contact CzechInvest's R&D Department.

INVESTORS IN CZECH R&D

The Czech Republic is the cornerstone of many world-class companies' global strategies. The high quality of Czech R&D, along with the country's skilled workforce and solid infrastructure provide an attractive environment for investors that want to take their products to the next level. Companies such as GE Aviation, Honeywell, RedHat, Roper Industries, Rockwell Automation, Ricardo, ST Microelectronics, Olympus and ON Semiconductor provide good examples of such investments.

Honeywell



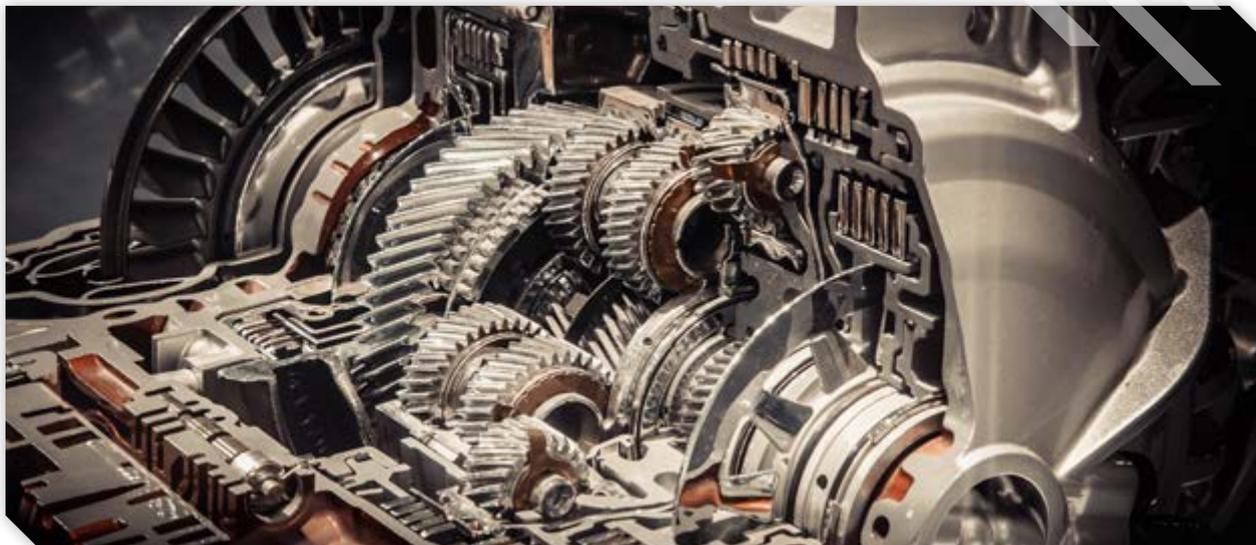
In 2006 the Brno design centre was integrated into Honeywell Technology Solutions' international network of research, development and engineering centres located in the Czech Republic, China and India. The R&D centre continued to grow consistently through 2008 right until 2016 with 1500 engineers and still counting. Currently the Center of Excellence in Brno is the largest and most modern research centre of Honeywell in Europe. With its world-class engineering talent and state-of-the-art infrastructure, the centre in Brno works on current and next-generation products for Honeywell's Aerospace and Automation Control Solutions business units. The areas of focus are the following:

AEROSPACE ENGINEERING & TECHNOLOGY

- Flight control systems
- FADEC (Full authority digital engineering)
- Engineering test services
- Sensing, guidance and navigation
- Electronic HW
- Cabin products
- Electronic and power controllers
- Transportation Systems Engineering & Technology
Innovation, variable geometry turbochargers, aerodynamic and vibro-acoustics analysis, bearing systems for:
- Commercial vehicles
- Passenger vehicles, light trucks

AUTOMATION & CONTROL SOLUTIONS ENGINEERING & TECHNOLOGY

- Combustion controls and valves
- Heating and cooling systems
- Global field devices
- Home comfort controls
- Fluid control products
- Access and security systems
- Enabling technologies
- Life and safety solutions



Red Hat



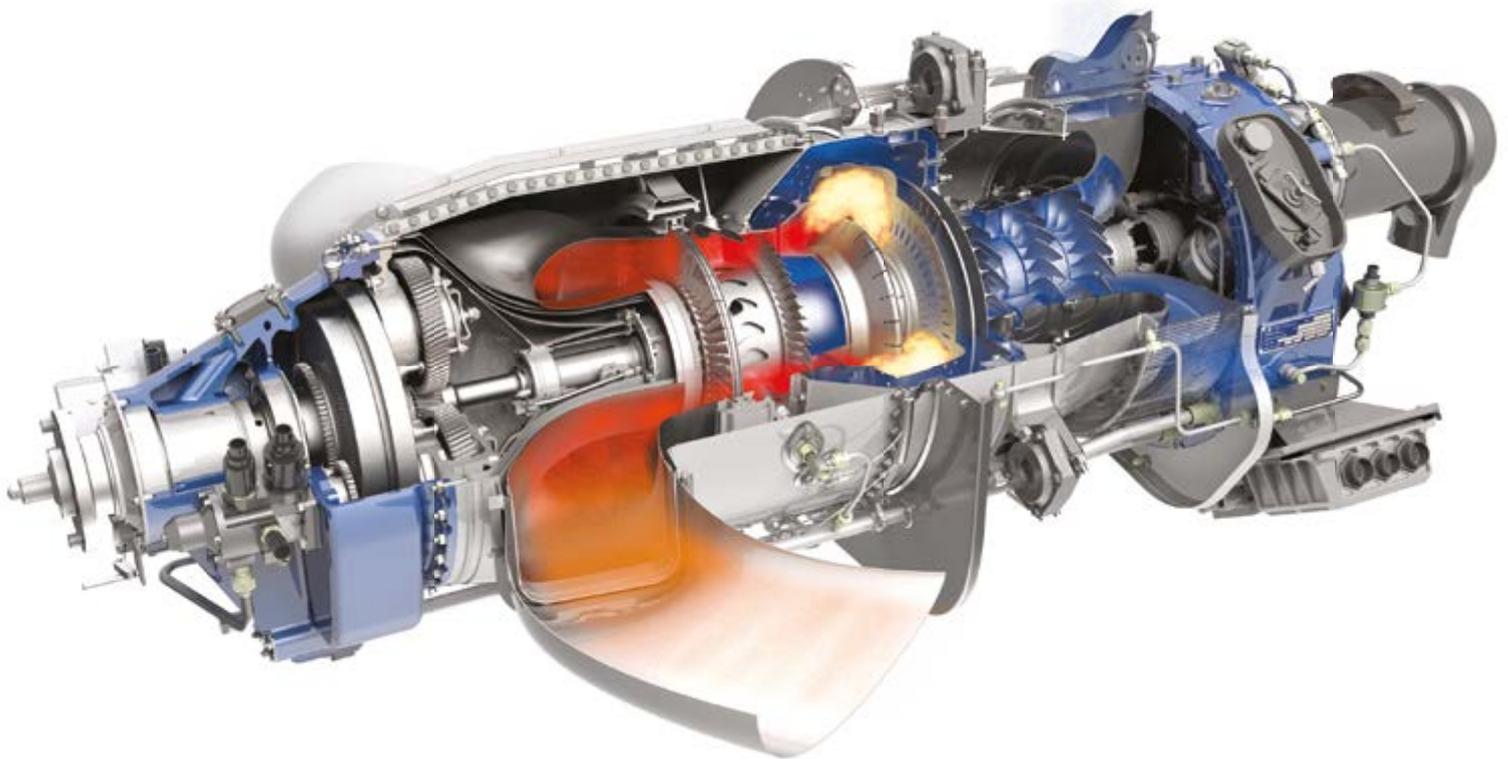
Red Hat is the world's leading provider of open-source software solutions, using a community-powered approach to reliable and high-performance cloud, Linux, middleware, storage and virtualisation technologies. The company also offers award-winning support, training and consulting services. Red Hat started its operations in Brno in 2004. Twelve years later the company employs 850 people and 130 students are currently getting their initial professional experience with the company. Red Hat Czech has

become Red Hat's largest engineering facility in the world and the employer of choice for people who want to work and live the open-source way. The Brno operation has received many internal and external awards including Best Engineering Site and Best Employer in the Czech Republic.

GE Aviation



GE Aviation has been successfully developing and manufacturing aircraft engines in the Czech Republic since acquiring certain assets of Walter Company in 2008. GE Aviation is a world-leading provider of jet and turboprop engines, components and integrated systems for commercial, military, business and general aviation aircraft. The company has a global service network to support these offerings. Based in Prague-Letňany and employing 400 people, GE Aviation Turboprops is the biggest manufacturing and design centre for turboprop engines in the Czech Republic. Since the acquisition, GE Aviation has certified three new engine models and made significant investments in its Czech business. The company's engineering team has already more than doubled in size and is expected to grow further as new development projects come down the pike. GE Aviation is currently preparing the establishment of the GE Turboprop Centre of Excellence, which should start producing modern turboprop engines in 2020.



If you look inside the GE H Series turboprop engine, you can see that there are no fuel nozzles but an innovative centrifugal fuel slinger system and a 3D aero blade design. The EEPC system enables to control power and the propeller by a single lever.

CZECHINVEST HEADQUARTERS

CZECH REPUBLIC

Stepanska 15
120 00 Prague 2

PHONE: +420 296 342 579
E-MAIL: fdi@czechinvest.org
WEB: www.czechinvest.org

www.czechinvest.org

CZECHINVEST WORLDWIDE

GERMANY – DÜSSELDORF

PHONE: +49 211 250 56 190
E-MAIL: germany@czechinvest.org

UK – LONDON

PHONE: +44 20 8748 3695
MOBILE: +44 77 8523 1520
E-MAIL: london@czechinvest.org

SCANDINAVIA

PHONE: +420 296 342 809
E-MAIL: scandinavia@czechinvest.org

CHINA – SHANGHAI

MOBILE: +86 13817792614
E-MAIL: china@czechinvest.org

JAPAN – TOKYO

PHONE: +81 3-5485-8266
E-MAIL: tokyo@czechinvest.org

KOREA – SEOUL

PHONE: +82 10 2987 5632
E-MAIL: seoul@czechinvest.org

USA – WEST

MOBILE: +1 (415) 794 0665
E-MAIL: california@czechinvest.org

USA – EAST

MOBILE: +1 (347) 789 0570
E-MAIL: newyork@czechinvest.org



This material is distributed free of charge.
Date of issue: June 2016