

PROPOSAL OF PROJECTS

Title of projects				
Universities	The period of solution (doba trvání projektu)	Total sum in thousands EURO (celková částka v tis. EUR)	EUR including common financial means in thousands EURO (v tom běžné finanční prostředky v tis. EUR)	Including capital resources in thousands EURO (v tom kapitálové prostředky v tis. EUR)
The solution of natural safety risks associated with anthropogenic activities, including risks related to closing mines				
VŠB-TUO, University of Žilina, Silesian University of Technology	2012-2014	2 400		
<p>In relation to anthropogenic activities undertaken especially in the underground there are, and are created new ways of realizing the security risks that may seriously endanger the health and lives of people and can also cause significant damage to property. Relevant examples are undermining effects to the earth's surface transformation, the outputs of various gas mixtures from the underground, especially in conjunction with changes in barometric pressure, when the risk of contamination by unbreathable or poisonous gas exhalations, which can be particularly flammable and therefore explosive. Special attention will be paid to the risks associated with attenuation, resp. completion of mining and the subsequent liquidation and closing of these objects.</p>				
Method of identification and prediction of physical-mechanical and technological properties of a surface layer created by conventional and unconventional technologies from the surface topography for selected technical materials including nanomaterials				
VŠB-TUO, University of Žilina, University of Bielsko Biąła	2013 - 2016	1 600	1 120	480

A comprehensive analysis of a topographical profile of cutting walls created especially by hydroabrasive technology is considered to be as a basis of the concept and methodological approach to the proposed project. Technological parameters will be uniform for all cuts. The selection of main geometric parameters and measurement of them is based on the basis of the topographic profile of a control sample for the study of metallic and also nonmetallic materials. A database of measured values will be subjected to statistical, frequency and spatial distribution analyses. The results of these analyses will be correlated with selected mechanical parameters of materials. A distribution dependence of the measured parameters at the depth level in the cut will be studied. On the basis of processing the results obtained by mentioned measurements i.e. statistical and correlation analyses we might proceed to an analytical derivation of equations of basic topographic, distribution, disintegration and correlation functions. According to the derived equations, it will be created an algorithm for a quantitative description of deformation parameters and deformation mechanism. Verification shall be carried out with a confrontation of the measured parameters and values reported in material and technical data sheets.

Analysis and solution of environmental issues within the TRITIA self-governing territories (Czech Republic – Slovakia – Poland) with a special respect to environmental informatics and communication technology application

VŠB-TUO, University of Ostrava, University of Žilina, Alexander Dubček University of Trenčín, Silesian University of Technology, University of Silesia in Katowice, University of Bielsko Biała	2013 - 2016	619	584	35
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Purpose of the project herein is to ensure continuous informing for residents of TRITIA self-governing territories, as for the state and trends in environmental basic components, as well as health state of the residents in connection with anthropogenic impacts of mining and other industrial activities. The most modern information technologies available in European scientific sphere would be applied to meet the target.

Realization output from the project will involve outputs of students' from all participating universities, ensuing from outputs of all their doctor's dissertation works characterized by environmental, information, and communication features. Participation of young starting scientists and researchers resident at the territories of TRITIA self-governing units would represent the main contribution of the project herein.

Effective methods to solve computerized problems of dynamic systems in engineering sciences and informatics.

VŠB-TUO, Silesian University in Opava, University of Žilina	2014 - 2020	1 120	1 120	
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This joint project of three universities (VŠB-Technical University of Ostrava, Silesian University in Opava, University of Žilina) is focused on computer oriented problems evoked from engineering sciences and informatics. Most of these problems are closely connected with advanced methods of applied mathematics which serves as a basic tool for their solution.

This project puts emphasis mainly on network oriented dynamic systems and solving their reliability. Most of industrial systems are dynamic. Dynamic reliability includes the study of stochastic processes (and possible interactions between both stochastic and deterministic processes) involving system dynamics when the emphasis is put on failures characterized by the exit of a safety domain. This approach is very innovative in context of reliability of dynamic systems.

The project is focused on research and development of new algorithms and computing codes used to solve the reliability of dynamic systems. Main emphasis is put on simulation techniques.

Expected results: new non-traditional methods and algorithms to solve the dynamic reliability problems. As an outcome, it will be possible to determine the reliability characteristics of dynamic systems, with respect to dynamic behavior of these systems. Obtained results can be applied for example, in transport control systems, in the area of decision making under risk, reduction of risk, also in medical data elaboration (reduction of risk of postoperative complications), etc.

SECCI - Smart European Cities and Communities Infrastructure (renewable energy options, smart grids, smart green buildings, smart metering, smart green integrated transport)

VŠB-TUO, University of Žilina, Opole university of Technologie, Silesian University of Technology	2013-2016	1 600	1 120	480
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Moravian-Silesian Region, Silesian Voivodeship, Opole Voivodeship and Žilina Self-Governing Region, which participate in European grouping of territorial cooperation (EGTC) TRITIA, are largely oriented to heavy industry. The environment of this area is strongly influenced by industrial, traffic and local heating pollutions – so the area has one of most polluted environment in Europe.

There is a strong societal demand arising during last few years, oriented to securing a healthy environment for millions habitants of these regions. New technologies based on clean, efficient energy, smart green integrated transport and intelligent passive buildings could play a key role in addressing this challenge. The project represents institutional effort in order to make better use of Europe's public R&D resources and to tackle common European challenges more effectively in a few key areas: energy, transport and climate change.

The regions with significant industrial history, skilled workforce and wide research potential based on universities and private sector have good conditions to work on development and applying these new technologies. Within the project, pilot implementations based on research activities of the technologies as clean, renewable energy sources, smart integrated transport, e-mobility infrastructure, intelligent passive buildings will be realized. These implementations are supposed to start wide commercial using of the new technologies.

Development of Separating Devices for Reduction of Dust Emissions from Small Furnaces

VŠB-TUO, University of Žilina, Silesian University of Technology	2013 - 2016	1 632	1 412	220
<p>At present, in a sphere of impaired air quality we fumble most with a problem of airborne dust pollution (e.g. expressed as PM10 concentration). One of the essential pollution sources are dust emissions from solid fuel burning in household furnaces and small capacity boilers (SCIs). TSP, PM10 and PM2.5 generated in SCIs are very dangerous because POPs (PAHs and PCCD/Fs and HM – heavy metals) are connected with their surface and they have a bad influence on health and environment. Emission of reduction of these pollutants is main objective of CAFÉ Strategy. Dust emissions are dependent mostly on ash content in fuel and on combustion process organization and the combustion device construction and type. If a primary measure has not reduced the output dust concentration to an acceptable value, it is possible to apply a secondary measure, separation, i.e. separation of dust contained in flue gasses. Particles emitted from small combustion furnaces are of smaller dimension character, therefore enhanced demands will be made on fractional separability. Research will be focused gradually on three principles of separators: mechanical, fabric and electrostatic. They will be tested in pilot scale in residential sector. A technical, ecological and economical evaluation of those PM reduction methods will be done.</p>				
<p>Problems of Nanoparticle-oriented Dust Emissions from Residential Heating Solid Fuel Burning</p>				
VŠB-TUO, University of Žilina, Silesian University of Technology	2013 - 2016	972	972	
<p>Indispensable part of Poland, the Czech Republic and Slovakia inhabitants heat their dwellings by solid fuel burning and they contribute to airborne dust air pollution significantly by this. Therefore it seems logical to tighten-up particulate matter (TSP - total suspended particles) limit concentrations step by step, which is realized both centrally (EN standards) and also individually on the level of particular states. Within this context, utterly fundamental questions arise in respect to what is to be measured actually (TSP, PM10, PM2.5, black carbon, soot, and associated organic pollutants (TOC's aerosols) (primary particles), secondary particles, etc.) and how it has to be measured (methodology). Dust output concentration value is influenced by more factors e.g. as a combustion device type, fuel, operation, combustion process, but also the assessment methodology. The aim of the methodology development is to unify the assessment procedure so that results can be representative and mainly comparable. Particulate matter toxicity increases with decreasing size, therefore enhanced attention will be aimed to their granulometry. Many nanoparticles which are produced by humans are produced purposefully and they are useful, though, this statement does not apply for dust nanoparticles emitted when burning solid fuel in small furnaces. The main objective of the proposed task is to investigate the influence of combustion process and biomass type on emission of TSP, and their subfraction PM10, PM2.5, „soot“, black carbon associated organic pollutants – „brown carbon“), HM – Hg, Cd, Pb, As, Se, Cu methods of their determination. A reference methods for determination of TSP PM10, PM2.5, soot and black carbon from SCIs (furnaces and small capacity boliers) will be proposed with EN and ISO standards taking into account.</p>				
<p>Residential Heating Emissions Inventory and Balance</p>				

VŠB-TUO, University of Žilina, Silesian University of Technology	2013 - 2015	980	980	
<p>Particulate matter emissions from solid fuel burning in household heating small combustion devices take a substantial share in polluted air. Indispensable part of Poland, the Czech Republic and Slovakia inhabitants heat their dwellings by solid fuel burning – coal and biomass. Particularization and unification of balance methodology for all three states is important for credibility improvement of results which will be used subsequently for strategic decisions oriented at emissions reduction from residential, agricultural and forestry sectors. The research will be aimed not only on emission factors determination at nominal conditions of a device but also at conditions which will bring testing laboratory conditions closer to reality as well as a methodology of emission monitoring and emission inventory from those sectors. That means the effect of operation, reduced output and bad maintenance will be observed. A pilot model of emission imonitoring and inventory will be done for selected area in three countries.</p>				
Condensing Boiler for Wet Biomass Burning				
VŠB-TUO, University of Žilina, Silesian University of Technology	2013 - 2016	1 938	220	1 718
<p>When burning biomass, “only” energy expressed as fuel calorific power is exploited. With increasing fuel moisture, the difference between calorific power and combustion heat increases dramatically. When burning biomass with higher water content, energy gain from condensation of water vapour contained in flue gasses is interesting and there is a big potential for considerable enhancement of the boiler efficiency here. However, this solution is accompanied by increased demands for a design of heat transfer surfaces and their cleaning, as well as it is necessary to solve fuel pre-drying, the very burner design and forced exhaust of flue gasses. Condensing boilers for gas burning are used commonly but condensing boilers for biomass burning represent a new field for substantial efficiency enhancement of utilization of heat contained in biomass, but also a field explored insufficiently, though. Biomass contains alkali metals and some CL and S compounds that can cause some corrosion problem. Therefore the research programme will be aimed not only on quality of fuels burner design, heat management but on construction of heat exchanger and construction material also. A pilot model of condensing boiler for wet biomass burning will be constructed and tested. A guidelines of fuel quality and boiler and exchanger construction will be described.</p>				
Production and Combustion of Mixed and Alternative Fuels				
VŠB-TUO, University of Žilina, Silesian University of Technology	2013 - 2015	768	768	

Mixed fuels on the basis of fossil fuels and bio-fuels represent a remarkable potential for burning in automatic boilers for household heating as well as agricultural and forestry sector. Alternative fuels form a separate field then. The research will deal with optimization of production formulae so that advantages of both fossil and bio component parts are combined in mixed fuel. The main objective of the proposed task is to investigate the influence of processing method and used fuel types for production of mixed fuels on combustion process in SCIs and emission of pollutants. Close attention will be paid to combustion efficiency – energy and emission efficiency (reduction of PM!!!!, CO, VOCs, POPs – PAHs, PCDD/Fs and HM emissions). A tested parties of mixed fuels (loose and compacted) will be prepared and tested in differences appliances. A guidelines for mixed fuel preparation will be done, with chemical behaviour of fuel and ash, HM, S and Cl content will be done.

Research of BTL (biomass to liquid) - Biofuels of the second generation

VŠB-TUO, University of Žilina, Silesian University of Technology	2013 - 2017	1 224	936	288
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BTL is a highly clean fuel without the content of sulphur and aromatic hydrocarbons. It is combusted without harmful reminders and, at the same time, it reports an excellent balance of CO₂. It is produced from the gasification of biomass from the most variable biogenic raw materials and other substances. Therefore, it does not represent a competitor to the food or feeding industry. Its transport and storage is not required nor modifications to the existing infrastructure. BTL can be used in existing and future diesel engines.

In the case of the transformation of biomass to gas or liquid fuel, the development is directed in several directions. One of the most prospective is the process of the gasification of biomass with the consequent use of produced gas in cogenerating units with a piston engine or combustion turbine or the use of gas in fuel cells or for the production of second generation biofuel. Today there is general accord that the use of gas in cogeneration units with piston engines is technology which is verified in terms of operation, the other three from which the best user properties are expected, are in the stage of research and development. It is the natural intention of the development and innovation to apply the best available technologies for the production of energy and prospectively also for the production of liquid fuel from biomass. Technologies for the gasification of biomass with the use of gas in a combustion turbine or in fuel cells are throughout the world intensively investigated however, it is necessary to say that commercial implementation is expected only in the nearest years. The key problem is the cleanliness of the produced gas and the keeping of its necessary parameters makes the facility complicated and expensive. Similarly, the use of gas produced by the gasification of biomass for the production of second generation biofuel by means of the Fisher-Tropsch synthesis is at the first stage and is very sporadic. Knowledge gained in dealing with research activities in the production of liquid biofuels II. generation will serve manufacturers of catalysts and implementers of the technology, manufacturers and distributors of fuel and agents biomass (agriculture, forestry, wood industry, etc.). Research synthesis of second-generation biofuels will reduce dependence on imported fossil fuels and will be used biomass in this region. The benefits of the project will also extend the know-how involved in workplace excellence not only in the region.

Development of methods and tools for gasification process design				
VŠB-TUO, University of Žilina, University of Bielsko Biąta	2013 - 2016	816	816	

Gasification is one of the most promising technology which may be used for biomass conversion to heat and power. Main advantages of gasification is that resulting gas may be used both for fueling boiler with high energy efficiency or for fueling piston engine. Moreover gasification systems are flexible in operation with different fuels and load. Main disadvantage of gasification is that the produced gases contain significant amounts of tars which may jam fuel system of the engine. In case of using gas for fueling boiler tars are not so dangerous and even may play positive role by increasing emissivity of flame. One of the important issue in gasification process is also ash melting and sintering temperature which should not be exceeded in the gasification bed. For these reason it is very important to have a reliable tools which could be used for designing gasification unit which could produce good quality of gas with required level of tars and which would operate with wide range of biomass including those with low malting and sintering temperatures of ashes.

Aim of the project is to develop tools for reliable design of gasification unit. This tool would consist of methods for fuel characterization by laboratory methods and set of models and formulas which for determination of in-bed parameters as well as gas quality. Tools will be validated against data collected on laboratory and industrial gasifiers.

Selected types of biomass types will be analyzed to determine elemental and proximate analysis, ash characteristic points and rates of devolatization and char burn-out (by using TGA techniques). Base on this results mathematical model of the process will be build which will take into account all basic processes occuring in the bed. This will be simplified zonal model which could be applied for fast calculations and even (in future) for on-line optimization of the gasification process. Model will be verified against data collected in laboratory and industrial gasifiers.

The benefit to the cooperating regions will mainly use the energy potential of biomass as a renewable energy generation at the place of consumption. Another benefit is the reduction of emissions from burning fossil fuels, especially coal. Research, development and subsequent implementation of gasification technology developed will improve job opportunities in the region.

Development of methods and tools for gasification process

VŠB-TUO, University of Žilina, University of Bielsko Biala	2013 - 2016	816	816	
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Gasification is one of the most promising technology which may be used for biomass conversion to heat and power. Main advantages of gasification is that resulting gas may be used both for fueling boiler with high energy efficiency or for fueling piston engine. Moreover gasification systems are flexible in operation with different fuels and load. Main disadvantage of gasification is that the produced gases contain significant amounts of tars which may jam fuel system of the engine. In case of using gas for fueling boiler tars are not so dangerous and even may play positive role by increasing emissivity of flame. One of the important issue in gasification process is also ash melting and sintering temperature which should not be exceeded in the gasification bed. For these reason it is very important to have a reliable tools which could be used for designing gasification unit which could produce good quality of gas with required level of tars and which would operate with wide range of biomass including those with low malting and sintering temperatures of ashes.

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Safety of fuels and technologies

VŠB-TUO, University of Žilina, University of Bielsko Biala

2013 - 2016

1 434

1 434

The achievement of energy from various sources inherently includes the storage and transport of materials which contain a large volume of energy, and also the processes of the conversion and the transfer of energy. However, this energy potential may, in the case of failure of the technology or a human factor, become out of control and cause undesired actions of the most variable character, e.g. fire, explosion, threatening of lives and health of people by toxic effects or damage to the environment.

Various types of accidents happen on equipment of all sizes, including small sources, not only the generally known explosions of natural gas or propane-butane, but also explosions of flammable dust, the intoxication of users by burnt gases from combustion and fuel, explosion of boilers, fire of warehouses for fuel, or contamination of the environment. The development and innovation of technologies related to the achievement of energy, and also in a wider context, brings along with the processes of its use possible dangers, including the threatening of new types and, therefore, of the demands of safety management. It concerns not only the use of traditional fuels, like natural gas, LPG, liquid fuel on the basis of oil derivatives or variously granulated solid fuel (including possible explosive dust), but also mainly non-traditional fuels, starting from hydrogen up to fuel cells, and mixtures of fossil fuel and fuel on the basis of waste or renewable energy sources (biomass).

The approaches of producers and users to safety remain traditional and in many cases do not respect originated changes which lead to the increase of risk, and secondarily to the threatening of the competitiveness of progressive technologies caused by fear of safety or already passed accidents. Within the innovation process it is necessary to achieve not only higher-performance technologies, but also safer technologies. The demand for an increase of safety during the use of substances with a large content of energy or other potential risk (toxicity, harmful character for environment, etc.) is also reflected in EU legislation and in its subsequent transposition into the Czech national legislation.

Territorial Safety and Security and Sustainable Development

VŠB-TUO, University of Ostrava, University of Žilina, Alexander Dubček University of Trenčín, Opole University, Opole University of Technology, Silesian University of Technology	2012 - 2014	240	240	
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The objective of the project is mutual co-operation between university workplaces in the area of safety and security with focus on territorial safety and security and sustainable development, crisis management, structural explosion protection, etc. The subject of the co-operation will be the preparation of joint projects, the exchange of experience, the mobility of academic and research staffs, doctoral students and students.

Experimentální výzkum a vývoj nových designových řešení a struktur ekologických automobilů

VŠB-TUO, University of Ostrava, University of Žilina, Alexander Dubček University of Trenčín, Opole University, Opole University of Technology, Silesian University of Technology		1 400	680	720
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Measurement and assessment in industrial organizations /comparison of approaches, methods and experience

VŠB-TUO, University of Ostrava, Silesian University in Opava, University of Žilina, Alexander Dubček University of Trenčín, Opole University, Opole University of Technology, Silesian University of Technology, University of Silesia in Katowice, University of Economics in Katowice, University of Bielsko Biała	2014	6	4	2
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The theoretical basis of this research project is the work explaining what the human capital is, what its significance for the company's performance is and how it can be measured. Human capital measurement is crucial for companies. With some simplification we can say that if we want to manage the human capital in the company, we need to know how to measure it.

Human capital measurement generally relates to its influence on the fulfillment of strategic objectives of the organization (core business), the HR processes effects (loyalty, satisfaction, etc.), the efficiency of personnel activities (acquisition, training and development, compensation, etc.) and the role of HR in the company.

Human capital measurement has a number of methodological difficulties (data interpretation, influence of company size, field of activity, etc.).

There are different experiences with the human capital measurement, such as the Slovak companies use the human capital measurement more in education, Polish companies deal with the human capital measurement using the BSC method in connection with the business strategy, Czech companies use the results of measurements that assess the impact of human capital on overall business results.

Research, using benchmarking methods, would point out the positive attitudes and experiences of individual countries, would identify the barriers in relation to the human capital measurement and point opportunities how to improve human resources management in the company and increase the effectiveness of management.

Development of creative industries in TRITIA , the European grouping of territorial cooperation

VŠB-TUO, University of Economics in Katowice, University of Žilina	2012 - 2014	2 000	2 000	
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The increasing competitive struggle both at the enterprise level and also at the level of local governments leads us to the preparation of the Czech-

Polish-Slovak project "Development of creative industries in TRITIA, the European grouping of territorial cooperation" which should help mobilize a closer Czech-Polish-Slovak cooperation of four border regions at increasing competitiveness especially by accelerating the development of creative industries. The main objective will be to take such steps that would help speed the development of creative industries in those neighboring regions. Expression the era of creativity is more and more frequently used to mark our times. From it a newly defined specific segment of the economy is derived which is labeled as creative industry. In the Czech Republic innovation is preferred (even in some government documents) to creativity in relation to economic development. What is the fundamental difference? Creativity provides "gross intellectual material" - new ideas, new discoveries, and theories but also products that can become the basis for innovation in the future. Innovation means the adoption of discoveries and products of creativity. Creative industry is the branch of human activity the products of which are based on creativity of individuals, their talent and abilities to create objects aesthetically unique by their form and which are competitive on the global market. Creative people form a specific kind of capital that concentrates around the elite universities. They become "producers of creative personalities". According to Richard Florida, in a wider economic context and in addition to the new technologies the universities are important as a source of creativity and talent. According to renowned authors, creative people are the main factor influencing the growth of territorial units' competitiveness. Thus they decisively affect their economic growth. From empiric research it follows that the spatial distribution of creative class is very unequal. This may contribute to a growing marginalization of many regions. Therefore, what the share of creative people in the particular regional units is can be interesting findings for the regional policy. It will immediately make possible for it to look for remedy (ways) how to change such unfavorable condition as the main reasons of localization preferences are more or less known. In the first stage the present experience from other EU member countries will be analyzed but also the results and experience of EU projects solution (e.g. within URBACT II). A great emphasis will be laid on the research of creative class and mainly its share in particular regions. Until recently data have been missing (with the exception of the U.S.A.) that would facilitate a comparison of data at the level of regions in various states. That lack of information has changed a large European research project "Technology, Talent and Tolerance in European Cities: A Comparative Analysis". Critical investigators' capacity will focus on a detailed analysis of local strengths and conditions and their use for working out the drafts aimed at the support of creative industries development.

Corporate Governance in the CZ, SR and Polen				
VŠB-TUO, University of Žilina, University of Economics in Katowice	2012 - 2013	30	30	

The aim of the project is to characterize up to now development of the corporate governance systems from the early 90-years until the beginning of 21th century in three Central European Countries, namely in the Czech republic, Slovakia and Polen. These countries passed the transformation towards market economy in previous twenty years. The basic used method of the project is comparative research. The research will be oriented on the following issues:

- the general orientation of corporate governance system
- the methods of privatization of state companies employed in individual countries
- the main business form of companies
- the ownership structure
- the legal system
- the banking system and capital market
- the board of directors and remuneration of managers
- the role of employees in the supervisory board
- the main actors in the corporate governance system
- the characteristic of code of best practice
- the main defects in the systems
- the pressure on changes
- the basic reformative measures and outlook in the future

From the comparative analysis the adequate conclusions and recommendations for appropriate reform steps in the corporate governance system in these countries will be derived.

MERLINGO - Rich - media Technologies for the Support of the Learning Process Using Cloud Computing paradigm for Students with Special Needs

VŠB-TUO, University of Ostrava, Silesian University in Opava, University of Žilina, Alexander Dubček University of Trenčín, Opole University, Opole University of Technology, Silesian University of Technology, Uniwersitet of Silesia in Katowice, University of Economics in Katowice, University of Bielsko Biała	2012 - 2015	640	460	180
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MERLINGO (MEdia-rich Repository of LearnING Objects – see www.merlingo.cz) project based on the rich-media technologies application in the eLearning environment is aimed at the building of the central repository of multimedia learning objects in the distributed environment containing teachers' presentations accessible on-line and on-demand within the national academic computer network CESNET2. The support of integration of students with special needs into a learning system is a brand new aspect of MERLINGO project activities being currently aimed at the area of the methodology development enabling the adaptation of study materials developed by rich-media technologies, their accessible distribution for students with special needs and pilot implementation of those adapted study materials, expansion of services of the central repository MERLINGO by a possibility of the indexation and browsing in audio records, the introduction of accessible multi-channel audio-visual communication service and finally, the expansion and improvement of services provided by support centers for students with special needs across participating universities. At a time when it is necessary to reduce the cost of running the organization, it seems appropriate to use Cloud computing paradigm. Creating an environment and methodological support for the introduction of rich-media technologies shifts developments in this area and allow their practical application.

Research of the project management state in business organizations and in the public sector

VŠB-TUO, University of Ostrava, Silesian University in Opava, University of Žilina, Alexander Dubček University of Trenčín, Opole University, Opole University of Technology, Silesian University of Technology, Uniwersitet of Silesia in Katowice, University of Economics in Katowice, University of Bielsko Biała	2012 - 2014	112		
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The project is focused on the current project management methods utilized in business organizations and in the public sector. The software tools supporting project management will be also analyzed. The project will explore the personal aspects in project management, ways of project teams organization, relationship between project management and business information systems.

Increasing the Accessibility and Quality of Educating Professionals in the Field of Expertise, Valuation and Real Estate Market

VŠB-TUO, University of Ostrava, Silesian University in Opava, University of Žilina, Alexander Dubček University of Trenčín, Opole University, Opole University of Technology, Silesian University of Technology, Uniwersitet of Silesia in Katowice, University of Economics in Katowice, University of Bielsko Biała	2013-2015	153	120	33
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Preliminary time schedule – Starting date of the project: 1 January 2013, date of finishing: 31 December 2015. The total budget of the project for the ÚOM (The Institute of Property Evaluation) at the Economic Faculty of the VŠB - Technical University of Ostrava: 3,820,000 CZK.

The project focuses on creating an innovative model of education for the professional groups of workers in expertise and valuation of property and in real estate market. The project counts on creating two educational programmes of specialization study within the framework of lifelong learning at the VŠB – TUO. The first programme is intended for experts and valuers. The second programme plans creating the study programme for real estate market workers. In the Moravian-Silesian Region there is lack of such continuous education and professional training of professionals from the real estate area. Both programmes count on creating a modular form of study. Both programmes will have a pilot check-up. The necessity of study programmes is based on the knowledge of market needs owing to the existing education of the project applicant, further on the questionnaire survey whose outcome is available.

Business Administration and Management in Present Development Trends

VŠB-TUO, University of Žilina, University Economics in Katowice	2013 - 2016	240	200	40
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Contemporary situation requires progressive analytic-synthetic view on the changes of entrepreneurial sphere with focus on the business economics and management. Structure of the enterprises and study of the dominant enterprises in the Czech Republic, Slovakia and Poland is the object of the research. The key areas of the research are: entrepreneurial form, business size and performance, innovation and R&D activities, intellectual and human capital, defense mechanisms against external influences, management methods, and ownership structure. The aim of the research is to identify and examine development and progressive trends in economy, business sphere and management. Methodology of the research is based on the diagnostic-analytic methods (diagnostic mission, cause-consequence analysis, stream analysis etc.) and on mutual exchange of information, discussions, workshops, brainstorming sessions etc. New theoretic and practical knowledge (new models, approaches, techniques and procedures usable in enterprises) will be the output of the project.

System of remote Health-care in respect to living environment

VŠB-TUO, University of Žilina, Silesian University of Technology, University of Ostrava	2012 - 2014	2 520	2 040	480
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In regions of TRITIA can be observed aging population and increasing health risks population implied by load caused by the industrial infrastructure, and by the effects of heavy steel industry. This results in increasing costs for hospital inpatient care and care for the elderly and other disabled persons.

The goal of the project is to design, implement and evaluate a pilot system in three suitably chosen locations in regions of TRITIA which could demonstrate a way how to improve this situation and could be later extended according to cover particular needs of a specific region. We plan to introduce a comprehensive system for remote health monitoring of target population groups with regard to the acute manifestations of industrial activity in the regions. The implementation of the system requires a means for personal equipment for individual patients mobile medical equipment tracking their health and reflecting on the acute health problems of monitored persons. Furthermore, it requires to introduce a sophisticated information infrastructure that will enable to collect and distribute information about the health risks and possibilities of their limitations due to their acute medical condition. It will also enable medical monitoring of patients in case of critical situations, evaluation of measured data both in real time or at the request of an individual patient. Monitoring and evaluation of health risks will be influenced with regard to monitoring environmental pollution. The introduction of this system will increase the standard of living of the target populations and will reduce the costs of outpatient and hospital care.

The implementation of the advanced numerical and experimental methods into the engineering practise

VŠB-TUO, University of Žilina, Silesian University of Technology	2013-2015	460	390	70
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The main focus of the project will be to create the set of the specialized professional texts from the domain of mechanics for the technical public. The texts will be differentiated with respect to the area of technical mechanics and with respect to the professional level of the customers - the readers. The texts will cover the topics like the finite element method and it's use in the technical practice, mechanics of solids and the computer modeling, mechatronics, technical vibration and representative applications, computational and experimental modal analysis and it's evaluation in technical practice, vibration diagnostics. The three professional levels will be supported : A) General level. The presentation for managers, the brief explanation for the middle and higher management to understand the possibilities and offers of these methods. B) Practical level. The professional courses for technically educated staff (like designers) to have the better knowledge of the theoretical background. C) Theoretical level. The higher level education for the developing staff (research workers) with bigger focus to the theoretical details. The outputs will have the form of printed text, human presentation and electronic materials on the internet.

The transfer of the new scientific knowledge in the area of the contemporary methods in mechanics in the university domain.

VŠB-TUO, University of Žilina, Silesian University of Technology	2013 - 2016	76	76	0
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The main focus is the common research in the prominent areas of mechanics as follows. 1) The investigation and evaluation of the limit state of stress of the structural parts in contact, using both computational and experimental methods. 2) The modern algorithms for the optimization tasks in mechanics of machines and machine parts. 3) The computational and experimental modal analysis and vibrational diagnostics, the investigation set up, the solution, the evaluation and interpretation of results. 4) Mechatronics. The study and professional stays of the students and research staff, focused to the above mentioned themes.

Research and development of a new type of progressive equipment for transport and handling of spent nuclear fuel and nuclear fuel				
VŠB-TUO, Žilinská univerzita, Slezská polytechnika Gliwice, Opolská Polytechnika	2013 - 2015	2 300	1 725	575
Research and development of progressive generators for heat energy production via exothermic reaction of metal and water in the presence of a catalyzer				
VŠB-TUO, Žilinská univerzita, Slezská polytechnika Gliwice, Opolská Polytechnika	2013 - 2015	2 900	2032	868
Research and development of electrical energy accumulators based on gravitational power generation systems and pumped storage systems				
VŠB-TUO, Žilinská univerzita, Slezská polytechnika Gliwice, Opolská Polytechnika	2013 - 2015	1 900	1 425	475
Research and development of autonomous new technologies for production, storage and distribution of hydrogen primarily from renewable sources				
VŠB-TUO, Žilinská univerzita, Slezská polytechnika Gliwice, Opolská Polytechnika	2013 - 2015	2 600	3375	650