



UNIVERSITY OF ŽILINA
Faculty of Management Science and Informatics



TEMPUS IV Joint Project

Centers of Excellence for young REsearchers

Registration number: 544137-TEMPUS-1-2013-1-SK-TEMPUS-JPHES

2014 – 2017



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TEMPUS Project No 544137-TEMPUS-1-2013-1-SK- TEMPUS-JPHES: Centers of Excellence for young REsearchers (CERES)

The Tempus project „Centers of Excellence for young REsearchers“ (CERES) is a joint project, which was carried out during the period from December 1, 2013 to November 30, 2017. The project was extended in 12 months by the approval of Education, Audiovisual & Culture Executive Agency (European Commission).

The wider project objectives were:

- (a) improvement of research conditions of young researchers in accordance with the education-innovation-research conception;
- (b) realization of program of partnerships between enterprises and universities from Ukraine, Belarus and EU countries.

The specific objectives of the project were following:

- (a) formal and technical implementation of CERES;
- (b) training of target groups: enterprise representatives, teachers and young researchers;
- (c) distribution of knowledge to universities from Partner Countries (PC);
- (d) sustainable dissemination of CERES to PC universities and local enterprises.

Proposed indicators of progress:

- (1) CERES portal is implemented, formally institutionalized and promotes actively collaboration among universities and enterprises;
- (2) successfully conducted training sessions and training reports;
- (3) significant increase in collaboration and mobility between universities and enterprises from Ukraine, Belarus and EU;
- (4) analysis of the CERES portal content regarding its correlation with labor-market demands.

The activities included the support of young researchers, creating/improving mechanisms for increasing their research potential and setting-up formal procedures for interactions with employers and for building an international network.

Partners from European Union, through training events, academic mobility and consultancy work for University teaching and administrative staff, PhD students and students ensured that their expertise in organization of young researchers, quality assurance, collaboration with employers, and international networking was translated into working arrangements.

Project Consortium

The project consortium consisted of 4 institutions from EU Countries and 10 institutions from the partner countries (5 from Ukraine and 5 from Belarus).

- **University of Žilina (Slovakia)**
- **University of Paderborn (Germany)**
- **Brno University of Technology (Czech Republic)**
- **Slovak Electrical Society Section (Slovakia)**
- **National Transport University (Ukraine)**
- **National Metallurgical Academy of Ukraine (Ukraine)**
- **Zaporizhzhya National Technical University (Ukraine)**
- **Radiy: Research and Production Corporation (Ukraine)**
- **Ministry of Education, Science, Youth and Sports of Ukraine (Ukraine)**
- **Belarusian State University of Informatics and Radio-electronic (Belarus)**
- **Gomel State University (Belarus)**
- **Brest State Technical University (Belarus)**
- **United Institute of Informatics Problems of the National Academy of Sciences of Belarus (Belarus)**
- **Intellectual Processors Ltd. (Belarus)**



Partner Countries – Belarus and Ukraine.

EU Countries – Slovakia, Germany and Czech Republic.

Coordination Team

The project coordinator was University of Žilina (Žilinská Univerzita v Žiline, ZU, Slovakia) and coordination team worked at Faculty of Management Science and Informatics (FRI).

Coordinator:

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The University of Žilina (ZU) is located in the northwest region of Slovakia. During recent years, the university has become an educational institution with a broad profile in scientific fields like technology, economics, management and educational sciences. The university enjoys very close cooperation with enterprises from fields of transportation, telecommunication and information technologies. Being a central Europe university, the ZU has received help during the transformation of educational processes towards the modern European requirements. The broad experience obtained during this transformation process, the knowledge about the problems has been used to help PC universities to undergo the same process towards the Bologna requirements.



The Faculty of Management Science and Informatics provides study programs for bachelor, master and doctoral degrees. In total more than 3,500 students study at the Faculty.

A special master course of the Faculty is a project taking 3 semesters. It allows master students to apply their theoretical know-how in solving real tasks. Young researchers collaborate with enterprises and develop information systems solutions. The Faculty has been involved in many long-time research partnerships with enterprises on national and international level. Faculty's specialists have great experience with the development of medium and large sized information systems. The broad expertise of ZU was used in the CERES portal implementation.

Consortium Members and Their Role in the Project

University of Paderborn (UPB)



Internationally the UPB positions itself as “The University of the Information Society”. The UPB is accredited as a family-oriented university and was awarded with the “Total E-Quality Award”. The teaching staff of the UPB is one of the most balanced in terms of gender in Germany. The UPB is responsible

for project Quality Control. This organization was leading partner for WP 4. Moreover, the UPB actively participated in the project operational management, knowledge transfer activities from EU to PC universities and supported PC universities with the establishment of partnerships with enterprises. As a partner having a lot of experience with TEMPUS projects the UPB provided assistance to yet inexperienced partners within the project consortium. Thus, both professional and TEMPUS-related knowledge has transferred from UPB to PC universities.

Brno University of Technology (BUT)

The Brno University of Technology (BUT) is a technical institution of higher education and is ranked among the best technical universities in the Czech Republic. The Faculty of Information Technology (FIT) has a long tradition of collaboration with other universities and enterprises. This collaboration is based on international research grants, exchange of PhD students and teachers, organization of science conferences and publishing.



Due to the numerous collaborations with both large and small industrial enterprises (especially information technology) the BUT played an important role for CERES development and the establishment of dissemination. BUT has high impact potential in implementation of CERES research structure and teaching. The research experience of BUT has been exploited for the dissemination of CERES to national and international universities.

Slovak Electrical Society Section (PSESKT)

The Slovak Electrical Society Section (PSESKT) is a public non-profit organization, established on a voluntary basis by leading academics and outstanding engineers from scientific and educational institutions.



The purposes of PSESKT are to improve the efficiency in the scientific sector, to protect professional interests, coordinate research activities, implement research results and exchange gained experience among partners. The PSESKT determines opportunities and threads of the scientific sector and develops solutions for future demands from highly computerized manufacturing, integrated automation and environmental protection.

PSESKT participated in CERES at the start of the project and supported the development of suitable conditions for the CERES initialization.

National Transport University (NTU)



The NTU provides an important contribution towards the development of national road technologies and national motor transport. The university is in contact with universities and scientific institutions from, e.g., CIS, Poland, USA, Germany and Slovakia. National Transport University is the national project vice-coordinator in

Ukraine and leads the WP 1. The NTU is in charge for the coordination of all Ukrainian consortium members and activities carried out in Ukraine. Among others, the NTU was responsible for: (a) organization of the fourth coordination meeting; (b) creation of a center to support young researchers and the CERES portal; (c) developing suitable conditions for the implementation of the project's objectives; (d) dissemination and promotion of project results and (e) actively participation in the project's management board.

National Metallurgical Academy of Ukraine (NMAU)

The National Metallurgical Academy of Ukraine (NMAU) is a technical university located in Dnepropetrovsk city. With about 15.000 enrolled students and a teaching staff of about 1.350 persons, the NMAU has a deep impact potential for the dissemination of CERES project. Furthermore, the numerous partnerships between the NMAU and enterprises and universities



around the world predestinated the NMAU to lead the development of partnerships between CERES and enterprises (WP3).

The NMAU operates a special Career and Employability Centre, which offers students and young researchers networking opportunities with enterprises. Many research projects and diploma thesis have been realized through this center.

As a technical university with high dissemination potential the NMAU has also led the dissemination activities to other engineering institutions and universities in its region. The NMAU organized national technical meeting in order to discuss the portal development and implementation.

Zaporizhzhya National Technical University (ZNTU)



The ZNTU is a one of the biggest East university of Ukraine. It has long lasting collaborations with regional enterprises in which solutions of young researchers are implemented. The Council of Young Scientists and Specialists at the ZNTU consists of more than 350 students and young researchers who participate in industrial and state research projects.

Due to the numerous collaborations with both large and small industrial enterprises, the ZNTU played a leading role for the establishment of CERES sustainability (WP 6). The main goal of the ZNTU was involving young researchers in cooperation with enterprises.

The ZNTU organized the summer school on *Modern Trends in Young Education* at which young researchers were introduced to modern trends in computer sciences, information processing and artificial intelligence.

Radiy: Research and Production Corporation (RADIY)



The Research and Production Corporation RADIY is the leading designer and manufacturer of safety critical digital instrumentation and control systems for nuclear power plants. In addition, RADIY produces computer based fire-fighting systems, systems for power industry, etc.

The corporation RADIY is involved in several activities focusing on the dissemination and sustainability of CERES. In WP 3 (raise the level of partnership with enterprises), RADIY developed the

“conception of how to involve young researchers into partnerships with enterprises” together with the NMAU and other universities. Furthermore, the corporation actively participated in different workshop and dissemination events to contribute with practical experience towards the development of CERES. The representatives of RADIY evaluated the CERES efficiency (see activity 4.3) and participated in different workshops and dissemination events (see activity 5.2). These events increased the professional level of young researchers, which have been involved in the project.

Ministry of Education, Science, Youth & Sports of Ukraine (MESISU)

The MESISU participated in CERES and developed suitable political conditions for the implementation of CERES and for the achievement of presented project goals and objectives. Beyond those objectives, the MESISU participated and conducted different meetings and conferences for the dissemination and promotion of project results. The goal of MESISU’s participation was to exchange experiences between the Ministry and other consortium partners.



Belarusian State University of Informatics and Radioelectronic (BSUIR)

Belarusian State University of Informatics and Radioelectronics (BSUIR) is the leading Belarusian University in telecommunications, informatics (computer science and software engineering) and electronics. The BSUIR has a close cooperation with different large IT companies: EPAM Systems, IBA, LG Electronics RUS, SamSolutions, ITransition and others.

The BSUIR was the national Project vice-coordinator from Belarus and led the WP 5 (Dissemination). The BSUIR covered several roles in the project.

The first role of the BSUIR has been installation, administration and support of the Belarusian part of the CERES portal. Additionally the BSUIR supported following project activities: (a) participation in training visits, seminars, workshops and coordination meetings; and (b) support of national and international relationships to exchange achievements of young researchers.

The second role of the BSUIR has been the support of dissemination and sustainability activities. Being located in the center of Belarus the BSUIR is linked to different government organizations and enterprises. This network is useful for the dissemination and was exploited during the project.



Gomel State University (GSU)



The Francisk Skorina Gomel State University produces a wide variety of high educated specialists. In particular, engineers and economists for industries like information technologies, mechanical engineering, radio electronic engineering, power engineering, oil exploration and

extraction, chemistry and similar. The GSU participates in governmental and interregional scientific and technical programs. The GSU is characterized by two aspects which were important for CERES: (a) a wide range of research fields and (b) strong relationships with enterprises. These strengths of the GSU have been used to disseminate and promote the results of the project. The GSU team held the International Conference of Young Researchers. It covered a wide range of different scientific branches.

The GSU also participated in the following project's activities: (a) support of the CERES portal approbation; (b) development the “conception of how to involve young researchers into partnerships with enterprises”; (c) holding the fifth coordination meeting in Gomel.

Brest State Technical University (BSTU)



At present, Brest State Technical University is one of the largest educational and scientific centers in the Western part of Belarus. BSTU undertakes research into important areas of construction, architecture, electronics and mechanical engineering. The University is actively involved into

scientific investigations. Participation of BSTU in the project facilitated knowledge transfer based education development in the conditions of sustainable environment.

The BSTU was one of the beneficiaries in this project. The BSTU supported the following project activities: (a) participation in different training visits, seminars, workshops and coordination meetings; (b) exchanging experience in organizing the research activities of young researchers and (c) promoting project results on different national and international conferences.

The CERES project results have been transferred to and tested in Brest leading enterprises. The resulting application experience is important and was analyzed for the project's dissemination and sustainability.

United Institute of Informatics Problems of the National Academy of Sciences of Belarus (UIIP)

The state scientific organization United Institute of Informatics Problems of the National Academy of Sciences of Belarus is one of the biggest scientific and academic organizations in computer science. The UIIP helped young



researchers and consortium participants in practical cooperation. The UIIP assisted consortium partners with involving young researchers into partnerships with enterprises. The representatives of UIIP participated in different workshops and dissemination events. These events increased the professional level of young researchers, which have been involved in the project.

Intellectual Processors Ltd (IP)



“Intellectual Processors” Ltd. is a high-tech innovative enterprise. It was founded in 2005 as a result of win in project Call “From Research to Enterprise” provided by Central European Initiative. The main aim of the enterprise is implementation of scientific and innovative initiatives of university staff, postgraduate students, researchers and students. This enterprise demonstrates the civil counter

part of governmental and private sectors in education and science sphere.

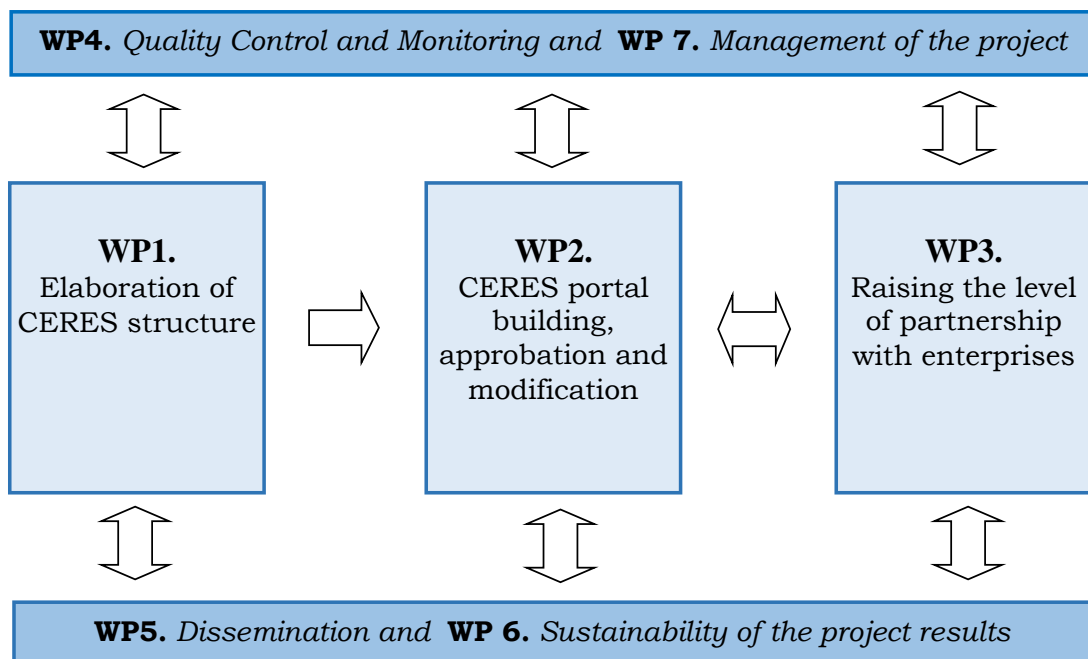
The company activities are the development of software and hardware in the field of image processing, pattern recognition, intellectual control, data mining, etc.

The participants from IP involved young researchers and consortium participants in practical cooperation with enterprises. The representatives of IP evaluated the CERES efficiency and participated in different workshops and dissemination events. These events increased the professional level of young researchers, which have been involved in the project.

CERES Work Packages

Work package	Title of Work package	Leader of Work package
WP 1	Elaboration of CERES structure	NTU
WP 2	CERES portal building, approbation and modification	ZU
WP 3	Raising the level of partnership with enterprises	NMAU
WP 4	Quality Control and Monitoring	UPB
WP 5	Dissemination of the project results	BSUIR
WP 6	Sustainability of the project results	ZNTU
WP 7	Management of the project	ZU and UPB

Overview of Work packages and their leaders



Overview of interactions between particular WPs

Summarizing the Key Project Activities according to the Logical Framework Matrix

All activities planned for the Tempus CERES project were aimed on the objective of improving research conditions of young researchers in accordance with the education-innovation-research conception. Program partnerships between enterprises and universities from UA, BY and EU have been realized under next work packages.

WP1. Elaboration of the CERES structure

WP 1.1. Analytical Preliminary Work

WP 1.2. First Working Meeting

WP 1.3. Initialization of CERES

The elaboration of the CERES structure was realized in next three steps:

(a) *Analysis of the initial situation*

In the first instance, administrative and teaching staff discussed the current situation with young researchers in both PC and EU universities. During the dialogue, consortium members shared information about the problems their young researchers are currently facing as well as opportunities and threats for their research.

Representatives from universities prepared the proposal for process improving of investigation of students, postgraduate students and young researchers based on the spirit of CERES. The structure of CERES was prepared and served as a prototype, which was used as a starting point.

Senior administrative staff undertook short trips to EU universities in order to gain insights into the research environment of European young researchers regarding international requirements. Comparing the EU and PC framework conditions for young researchers help partners to improve the conception of CERES.

(b) *First working meeting*

In the first working meeting in ZU (Žilina, Slovakia) all representatives of the consortium exchanged individual expectations, concerns and circumstances within the project. Meeting participants discussed current problems of young researchers in Belarus and Ukraine, agreed on the timetable, discussed CERES preliminary structure and provided a perspective conception for development.

(c) *Assessment of hardware and software needs*

Based on this strategic conception the project coordinator and specialists from NTU (Ukraine) and BSUIR (Belarus) assessed the hardware and software needs for the CERES portal. Technical staffs organized the procurement of computers, multimedia equipment, printers and software for the planned CERES portal servers. The coordinator selected the design of the CERES logo on a competitive basis from proposals of all participating organizations. Design of CERES portal was proposed.

WP.2. CERES Portal Building

WP. 2.1. Selection and Training of CERES Managers

WP. 2.2. Realization of the CERES Portal

WP. 2.3. CERES Portal Improvement

The steps for the CERES portal building were as follows:

(a) *Training CERES managers*

CERES managers were selected from representatives of PC universities. They were trained in workshops at BSUIR, NTU and ZU. Teaching staff from EU universities prepared the relevant information materials. The goal of these training activities was to enable CERES managers to develop and support different CERES events. After being trained, CERES managers prepared lectures that they held at their home universities. Conducted lectures provided information about the idea of CERES and training opportunities. Finally, CERES e-journal was registered and opened. Journal Editorial board was established.

(b) *Selection of CERES architecture. Specification, definition and execution of software architecture and programming steps*

After the CERES managers received training in software architecture and content design, they assessed potential software concepts regarding their suitability for CERES. The project coordinator selected the programmer manager who was responsible for programming the CERES portal. The programmer manager was Dr. Patrik Hrkut from ZU. The programmer manager specified requirements of the CERES portal, defined rules for its usage, planned and executed the programming steps for a test version of the portal. Specialists from ZU made visit in BSUIR (Minsk) and in NTU (Kiev) in order to program and install the CERES portal on national servers.

(c) *CERES improvement and Portal testing*

Consortium members and external experts (enterprise representatives) were invited to test and discuss the performance of the portal. Test and discussion results were evaluated at working and technical meetings and considered for the final design of the CERES portal. The best solution was selected, checked during a test period and extended to a final version. This version was implemented. This implementation among other things included technical support and publication opportunities (CERES journal).

The programmer manager supported and analyzed the approbation of the CERES portal. The results of the approbation process were formalized for a national experts meeting in NTU (Kiev, Ukraine) and in BSTU/BSUIR (Brest/Minsk, Belarus). The university representatives and invited experts from enterprises discussed the portal beta-testing results and project implementation. The programmer manager realized a final version of the CERES portal and prepared full program documentation.

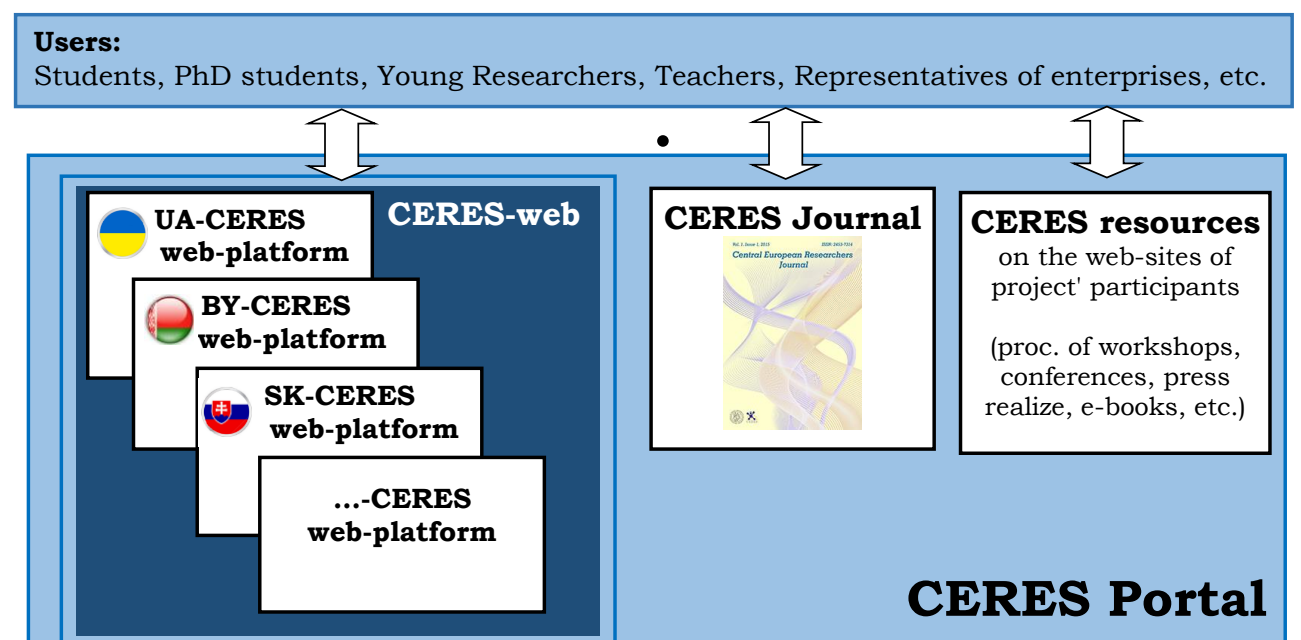
The idea of CERES was to establish long-term relationships between 3 groups: (a) students and young researchers, (b) teachers from Universities and (c) representatives of enterprises.

The benefits for young researchers are the access to relevant scientific problems of enterprises, the opportunity of participating in research teams with leading specialists and to obtain practical experience, which is useful for future employment. Teachers can use the CERES portal to form research groups dealing with topics that young researchers are interested in and test the performance of their solutions on real tasks. Enterprises benefit from CERES by getting access to research capacities of universities and receive scientific tools to solve their real problems.

Altogether, CERES reconciles the key drivers of a knowledge-based society. Transferring the results created in research cooperation between universities and enterprises into the curricula of degree courses corresponds with the concept of the knowledge triangle.

All target group members can register on the CERES portal at no charge, receive information about past, on-going and future research projects and get in contact with other portal users in order to share information and collaborate. Teachers and enterprise representatives can initiate new research projects on the portal, invite students to collaborate and publish project results in the CERES e-journal. The CERES centers at NTU (Ukraine) and BSUIR (Belarus) provide the target groups with physical resources, necessary hardware and software for on-site collaboration.

Both metropolitan and rural universities participated in CERES. After the portal is implemented any university may join CERES. Increased interdisciplinary collaboration among universities and enterprises promotes research conditions of young researchers and enhances their skills.



CERES Portal structure

WP.3. Raising the Level of Partnership with Enterprises

WP 3.1. Extending Partnerships with Enterprises

WP 3.2. International and Technical Support of CERES

WP 3.3. Intense Training of Teachers and Young Researchers

In order to raise the level of partnership with enterprises this work package contained the following core tasks:

(a) *Identification and discussion of current and desired status of cooperation*

CERES managers evaluated current level of cooperation between universities and enterprises as well as among universities themselves. Based on these evaluation results and in accordance with the concept of the knowledge triangle (education-innovation-research), representatives from universities and enterprises discussed opportunities to extend existing partnerships and established new partnerships between relevant groups. Several local meetings with representatives of enterprises were organized under this WP. The resulting concept, including a strategy to involve young researchers into prospective partnerships with enterprises was discussed in the meetings of the consortium.

(b) *Documentation of the European education system*

Representatives from EU universities prepared materials about the research environment of young researchers and their opportunities in modern European education systems. The target groups of these materials were students, young researchers, teachers and administrative staff from PC universities. Several international Workshops on CERES: Modern Experience on Young Researchers Organization were organized for further international support.

These workshops were organized in the frame of the International Conference on Information and Digital Technologies (IDT). The principal goal of these workshops was support of young researchers, developers and teachers from academy as well as industry working in all areas of information technologies. Works of PhD students and young researchers were presented in these workshops.

The well-known invited lecturers and keynote speakers participated in these workshops too. They shared own experience in different research areas. These CERES workshops improved the communication between partners from EU and PC.

(c) *Short training visits for students and young researchers from PC*

Students, young researchers and teachers from PC universities visited EU universities in order to get experience with organization of modern European research. Teachers got an insight into the pedagogical methods at EU universities and the situation of young researchers in the EU. The representatives of ZNTU (Zaporizhzhia, Ukraine) organized a summer school with the topic “Modern Trends in Young Sciences Education”. Representatives of consortium members participated at this summer school with lectures. Main aim of this school was provided information about modern trends in informatics and artificial intelligence.

WP 4. Quality Control and Monitoring

WP 4.1. Calculation of Quality Indexes

WP 4.2. Monitoring Visits

WP 4.3. Evaluation of the CERES Efficiency

Quality control and monitoring was ensured by Quality Control Officer (QCO) from UPB (Germany) - Dr. Guido Kaufman. Dr. Kaufman was a linking part between the Project Coordinator, project participants and young researchers involved in the project. The Project Coordinator, national Project vice-coordinators, Project Management Team and QCO discussed methods and organizational arrangements of internal and external quality control. His core tasks were:

(a) Track the project progress, deadlines of activities and their settlement

The QCO calculated and analyzed statistical measures from qualitative and quantitative indexes to track project progress and the settlement of activities. Qualitative indexes were derived from special questionnaires capturing the quality of teaching, investigation process and mobility. Quantitative indexes were derived from evaluations of e.g.: number of teachers, young researchers and enterprises involved in the project activities.

QCO and CERES managers from PC universities filled special questionnaires. These questionnaires were distributed periodically during the project and gathered up qualitative information about the project progress and mobility.

(b) Regular monitoring visits in PC. Reports to the Project Coordinator and members of Project Management Team

The QCO conducted several monitoring visits. The agenda of these visits included: (a) meetings with project participants; (b) meetings with the experts from non-consortium universities and enterprise representatives; (c) monitoring project progress and deadlines of activities; (d) preparing quality control reports. The QCO also conducted quality control reports. His reports included qualitative and quantitative performance indexes. The results of all evaluations were disseminated to project participants.

(c) The evaluation of the CERES efficiency

This evaluation and its convergence with European standards were calculated based on the quantitative and qualitative indexes measured by the QCO. The qualitative evaluation of the project performance comprised three stages: (a) evaluation of involved participants; (b) evaluation of the project implementation as a whole and (c) evaluation of the increase in knowledge and skills of project participants. External experts prepared own summaries about the quality of CERES.

WP 5. Dissemination of the Project Results

WP 5.1. Distribution of New Knowledge to the Regions

WP 5.2. Dissemination Events

WP 5.3. Dissemination of Results via Internet

The dissemination of project results has been mainly conducted via:

(a) *Digital brochures, documentations and reports.*

The Project Management Team and the CERES managers prepared and published information about the project for enterprises, teachers, young researchers and students. This information was published in brochure, workshop's proceedings, documentations and reports, which are mainly available in digital versions in all relevant languages. Teaching and methodological seminars with local authorities, industry and government institutions concerning the staff retraining were organized. Information about the project was distributed among representatives of different target groups. Brochures about project results and CERES were published and disseminated.

(b) *Consortium dissemination events*

Teachers, CERES managers, representatives from enterprises (RADIY, UIIP and IP) and members of the Project Management Team conducted dissemination events like meetings, workshops and conferences, such as the conference “**Youth in Science**” in UIIP (Minsk, Belarus). Project participants also presented project results at non-consortium events organized at non-consortium universities and enterprises. The main goal of these events was to present project results to representatives from non-consortium universities and enterprises. Consortium representatives also participated in other events with potential impact for the dissemination of CERES.

(c) *Dissemination of results via Internet*

The Project Management Team collected project results and young researchers' impressions and periodically prepared publications about the current project progress in the CERES portal and via public media. Web-sites of national project vice-coordinators were created at NTU (www.ceres.ntu.edu.ua) and BSUIR (www.bsuir.by/ru/ceres). The site of NTU was the main project's web resource. Relevant university websites were regularly updated, including web site of BrSTU (www.ceres.bstu.by) with broad information for young researchers about relevant research grant and study program opportunities and home CERES team activities and events participation. Information about the project progress was also disseminated through different network associations, public media and stakeholders.

WP 6. Sustainability of the Project Results

WP 6.1. Joint Communication with Institutions and Programs in PC

WP 6.2. Approbation in Target Groups

WP 6.3. Attention through e-journal Publications

The sustainability of the project is based on three essential factors:

(a) *Long-term cooperation between the PC universities and enterprises*

Raising the level of partnerships with enterprises (WP3) has an important impact on the sustainability of the project. Once elementary partnerships are established, they are expected to consolidate, enhance and expand to additional universities and enterprises. The close-to-market cooperation allows PC universities to gain ideas for operation, growth and further dissemination of the CERES portal. The acceptance by institutions like Councils of Young Researchers and national government education and development programs are crucial for the sustainability of CERES. This WP aimed to establish such joint communication and cooperation.

(b) *The CERES portal itself*

The developed CERES portal is an open system which is able to accommodate further universities and enterprises even after the project was accomplished. After the portal was implemented, it can grow without additional resources. The CERES portal is expected to grow for three main reasons: (a) CERES portal provides a solution for the current problems of young researchers and supports them actively; (b) CERES focuses on current application problems and (c) CERES is an effective instrument for collaboration and communication. Term papers, degree works and PhD theses have been created within the CERES environment. Several conference of young researchers was organized in Ukraine and Belarus.

(c) *Creation of platform for support of young researchers publications*

The Central European Researchers journal has biannually published results of young researchers, information about different current international project and new ideas of potential research teams. Research papers from students, PhD students and other young researchers are reviewed by reviewers from international Editorial Board and attract the attention of interested researchers.

We sure that besides investments in the virtual and physical infrastructure the idea of CERES took into account effects of capacity building when PC staff and CERES managers were trained by EU staff (WP2 and WP3). Trained staff will share their increased human capital with other colleagues (enterprises, university colleagues and students) with a multiplier effect. This multiplied human capital approach will ensure necessary know-how regarding the CERES infrastructure without any future needs for extra resources. This promotes sustainability of CERES as well as the concept of knowledge triangle: education-innovation-research.

WP 7. Management of the Project

WP 7.1. Management by Project Coordinator

WP 7.2. Management by the Project Management Team

WP 7.3. Management Visits

WP 7.4. Operational and Financial Management

The project was managed by the Project Coordinator, the national vice-coordinators and the Project Management Team (PMT). The members of PMT were responsible for all activities within the framework of the project that took place in their organizations. The Project Coordinator provided overall supervision and monitored the project progress. The PMT coordinated activities and tracked project performance and quality at national level. Having broad experience with TEMPUS projects, representatives of UPB helped consortium members with operational management.

The Project Coordinator was responsible for the following project activities:

- management of the project with the assistance of national Project Vice-Coordinators;
- information of the members of the Project Management Team about actual activities and project resources;
- management of project budget and preparation of financial reports for EACEA;
- decision making concerning potential conflicts encountered within Project Management Team and consortium members.

The Project Management Team managed the following project activities:

- coordination and monitoring of the implementation of project activities;
- distribution of information about project implementation and project resources to project participants;
- management of local project budgets and preparation of reports.

This project was implemented within a 4 years period. Six coordination meetings were organized. Three meetings were located at PC universities and three meetings were at EU universities. As far as possible, these meetings were combined with other project meetings. This reduced expenses and supported cooperation in administrative/financial monitoring.

The day-to-day management was one of the most important parts of the project. Administrative staff supported operational and financial management and provided assistance with mobility and training (e.g., arrangement of visas, accommodation, and help with the adaptation). Administrators from ZU and UPB supported PC universities with management.

CERES Project No 544137 – Key Meetings and Activities

№	Name of activity	Date	WP	Org.
2014				
1.	The First Coordination and Working Meeting	28.04-29.04.14	WP7.3	ZU
2.	SYRAS: Section of Young Researchers and Scientists	09.07-11.07.14	WP3.2	ZU
3.	The IX International Conference on Road Safety 2014	12.11.2014	WP6.2	NTU
4.	The Second Coordination Meeting	29.10-30.10.14	WP7.3	ZU
5.	NTO-Monitoring visit of National Erasmus+ Office in Belarus	05.11.2014	WP4.3	BSUIR
6.	NTO-Monitoring visit of National Erasmus+ Office in Ukraine	23.12.2014	WP4.3	NTU
2015				
7.	Workshop of Young Scientists at NTU	11.03.2015	WP5.1	NTU
8.	The Third Coordination Meeting	23.03-24.03.15	WP7.3	BSUIR
9.	Synergy of TEMPUS Projects CERES and ECOTESY	22.05.2015	WP5.2	ZNTU
10.	CERES Workshop: Modern Experience on Young Researchers' Organization	07.07-09.07.15	WP3.2	ZU
11.	Publishing the first issue of the CERES journal	July 2015	WP6.3	ZU
12.	Webinar between IP and ZNTU	14.09.2015	WP5.1	IP,ZNTU
13.	The Fourth Coordination and Working Meeting	12.10-14.10.15	WP7.3	NTU
14.	QC-2015 (4th coordination meeting at NTU, 2015)	12.10-14.10.15	WP4.3	UPB
15.	Seminar on Modern Methods and Technologies for the Design, Construction, Maintenance of Roads and Structures	12.10.15	WP3.1	NTU
16.	Lectures by CERES Manager of NMAU at Industrial Plant "Dniprostal"	26.10-30.10.15	WP3.1	NMAU
17.	NTO-Monitoring visit of National Erasmus+ Office in Belarus	29.10.2015	WP4.3	BSUIR
18.	The X International Conference on Road Safety 2015	13.11.2015	WP6.2	NTU
19.	BSUIR. CERES Project registration	18.11.2015	WP1.3	BSUIR
20.	Conference of Young Scientists and Students on Modern Problems of Mathematics and Computer Engineering	19.11-21.11.15	WP5.2	BSTU
21.	International Conference Youth in Science 2015	01.12-03.12.15	WP5.2	UIIP
22.	Conference on Distance Learning – Education Environment of XXI Century	03.12.2015	WP5.2	BSUIR
23.	Visit of Representatives of ZNTU to BUT	08.12-10.12.15	WP1.1	ZNTU
24.	Publishing CERES journal (vol. 2)	Dec. 2015	WP6.3	ZU

2016				
25.	CERES Seminars (Lectures) at BSUIR and GSU	25.01-29.01.16	WP3.2	BSUIR GSU
26.	Conference for Young Researchers and Students	21.04-22.04.16	WP6.2	GSU
27.	The Fifth Coordination Meeting	21.04-23.04.16	WP7.3	GSU
28.	Workshop on CERES at BSTU	26.04.2016	WP6.2	BSTU
29.	Workshop on CERES: Aspects of Project Activities Implementation in the Scope of Modern Industry Demands	19.05-20.05.16	WP5.2	RADIY NTU
30.	Publishing CERES journal (vol. 3)	July 2016	WP6.3	ZU
31.	Summer School for Young Researchers	21.09-26.09.16	WP3.3	ZNTU
32.	Lectures of CERES Manager for International Students	27.09-28.09.16	WP3.1	NMAU
33.	Technical Workshop on Portal Implementation	01.11.2016 16.11.2016	WP2.3	NMAU BSUIR
34.	CERES Seminar (Lectures) at NMAU	02.11.2016	WP3.2	NMAU
35.	Working Meeting for Young Researchers and Students	03.11.2016	WP5.2	NTU
36.	International Conference for Young Researchers	22.11-25.11.16	WP6.2	NMAU
37.	Publishing CERES journal (vol. 4)	Dec. 2016	WP6.3	ZU
38.	Dissemination Seminars at NTU	Dec. 2016	WP6.3	NTU
2017				
39.	Lectures for Students Following the ACADEMY OF STEEL Project Given by CERES Manager	02.02-10.02.17	WP3.2	NMAU
40.	Workshop on CERES Networking: IT Style	16.02.2017	WP3.1	BSTU
41.	Master Class on Search Methods in Artificial Intelligence	13.03-22.03.17	WP3.2	NMAU
42.	NTU. CERES Project re-registration	30.03.2017	WP1.3	NTU
43.	The Sixth Coordination Meeting	24.04-26.04.17	WP7.3	UPB
44.	QC-2017 (6th coordination meeting at UPB, 2017)	24.04-26.04.17	WP4.3	UPB
45.	Job Fair 2017 at NMAU	27.04.2017	WP3.1	NMAU
46.	Workshop INNOCENS and CERES	15.05.2017	WP5.2	BSTU
47.	CERES Workshop: Modern Experience on Young Researchers Organization	05.07-07.07.17	WP3.3	ZU
48.	Publishing CERES journal (vol. 5)	July 2017	WP6.3	ZU
49.	ATHEALTH Technical Workshop on CERES Portal Implementation	04.09-05.09.17	WP5.2	ZU
50.	Teaching Visit of Representatives from ZU to BSTU	18.09-20.09.17	WP3.2	BSTU
51.	Technical Visit in order to Discuss Source Codes and Installation Process of the CERES Portal	18.09-20.09.17 10.11-20.11.17	WP2.2	BSUIR NTU
52.	Ukrainian National Expert Meeting with QC-2017	16.10-18.10.17	WP4.3	NTU
53.	Belarusian National Expert Meeting with QC-2017	30.10-01.11.17	WP4.3	BSTU BSUIR
54.	The X Conference of young scientists and students	23.11-24.11.17	WP5.2	BSTU
55.	Publishing CERES journal (vol.6). Post issue	Dec. 2017	WP6.3	ZU

TEMPUS CERES Project Was Launched – The First Coordination and Working Meeting at University of Žilina

Twenty-five representatives from European, Ukrainian, Belarusian universities and industrial enterprises met in Žilina (Slovakia) to improve support of young researchers.

Teachers, scientists and industrial professionals met for a two-day kickoff meeting on April 28-29, 2014 at University of Žilina (Slovakia) to discuss TEMPUS project *Centers of Excellence for young Researchers (CERES)*. CERES aims at providing a new platform for young researchers in order to assist and train them. Prof. Tatiana Corejova, the rector of the University of Žilina pointed out very enthusiastically to her colleagues that *“improvement support of young researchers provides an environment for the science development”*. *“CERES is an integrating European Project”* said Dr. Emil Krsak, the dean of the Faculty of Management Science and Informatics.

Prof. Karol Matiasko from Department of Informatics of University of Žilina (Slovakia) is a leader of the consortium of 3 EU, 3 Ukrainian and 3 Belarusian universities, 1 Ukrainian and 2 Belarusian research enterprises, a non-profit organization from Slovakia and the Ukrainian Ministry of Education. Participants from these organizations joined forces during two days to draw the first lines of the future platform. The implementation of CERES provides a support for young researchers. Both, promoting the research conditions of young researchers and involving them into real research projects of enterprises, are expected to raise the level of higher education.



Section of Young Researchers and Scientists under International Conference on Digital Technologies 2014

Section of Young Researchers and Scientists (SYRAS) took place during the *IEEE International Conference on Digital Technologies (DT 2014)* from July 9 till July 11, 2014. SYRAS was intended to young researchers, scientists and educators and aimed to establish and expand international contacts and cooperation. Each paper submitted to SYRAS was evaluated for acceptance by at least two peer reviewers. Papers from SYRAS were published in special proceedings with ISBN 978-80-971694-0-4 and indexed in different open access databases. Papers in this section were presented as posters. Participants of SYRAS had access to all the sections of the conference and they could discuss their results with researchers from various European countries.

Representatives from University of Žilina, Slovak Electrical Society Section, Zaporizhzhya National Technical University, Belarus State University of Informatics and Radioelectronics, together with industrial partners from Radiy Corp. and Intellectual Processors Ltd. participated in a meeting organized at University of Žilina (Slovakia). Teachers, scientists and professionals from industry met for three days to discuss the modern technologies for support of research of young scientists. During the meeting, the participants obtained experiences with organization of an international event. This will be used to support international cooperation between young scientists.

SYRAS and the meeting organized at University of Žilina supported the main goal of CERES, that is, create and support of a new platform for young researchers in order to assist and train them.



Participation of Young Researchers at the Conference on Road Safety: Legal and Organizational Aspects

On November 12, 2014, participants of the TEMPUS CERES project in Ukraine took part in the *IX International Scientific-Practical Conference on Road Safety: Legal and Organizational Aspects*.



The main objectives of the conference were presentations of young researchers' achievements and establishment of connection between young researchers and specialists from Ukrainian enterprises. During the conference, goals and activities of the TEMPUS CERES project were shown to

representatives of various industrial enterprises and young scientists. Representatives of enterprises liked ideas of this project and expressed support to this kind of activities because they have a high potential in future development of industry. Young scientists were also excited by the project because it could allow them to do a research whose results could be applied in solving real problems.

Based on the results of the conference, Ukrainian public organization "Public transport security committee" together with the Ukrainian public association "Ukrainian Medical Center of road safety" and "Donetsk Law Institute of MIA of Ukraine" summarized all received proposals, and the participants would like the Cabinet of Ministers of Ukraine to made familiar with results of the conference.

Leaders from National Transport University thanked to the participants for their active involvement, comments and suggestions to improve road safety as well as support of the research work of young scientists and students and for development of their partnerships with industrial enterprises.



The Second Coordination Meeting of the CERES Project

More than 20 representatives of project's partners analyzed implementation of CERES project on October 29-30, 2014 in Žilina (Slovakia). Teachers, scientists and administrative staff members met for a two-day meeting at University of Žilina to discuss process of project realization. Ing. Monika Vajsova described portal's structure, current state and its future development. Prof. Karol Matiasko, the project coordinator, and Prof. Vitaly Levashenko led discussion on the portal development. The real steps of implementation of CERES and support of young researchers were proposed in the meeting. The participants supported CERES ideas to provide a new opportunity and support to young researchers. It was emphasized that the project would improve the research conditions of young scientists and would involve them into real research project of enterprises what would result in increasing in the level of higher education

Quality of project implementation was also evaluated in the meeting. *"Quality control events showed that project CERES has been realized with good quality"* said Dr. Guido Kaufmann, the quality control officer from University of Paderborn. It was concluded that new aims and new events for dissemination and sustainability would be useful for future project implementation.

Consultations of management teams (financial and operational management) identified weak points and proposed a strategy for the following year that would have to be accomplished by the project participants.



Workshop of Young Scientists at National Transport University



The workshop was held at National Transport University on March 11, 2015. The workshop was attended by teachers and staff of the university, representatives of the leading enterprises in the transport sector in Ukraine, and graduate and doctoral students of all faculties of the National Transport University.

Main results of CERES, analysis of current state, project's objectives and deliverables were presented by Prof. Mykolaj Dmitriev, the first vice-rector for scientific work of the university. The key items of his presentation were extended by Prof. Oleksandr Melnichenko, scientific secretary of the National Transport University and the chairman of the scientific board of students, post graduates and young scientists.

Prof. Olena Slavinskaya, the dean of the Faculty of Transport Construction of National Transport University, disclosed the results and prospects of undergraduate students and research skills of young scientists and their importance for research capacity of main enterprises of Ukraine.

Representatives of industrial companies underlined the importance of training students and young scientists to address current scientific and practical business problems from their point of view. Dr.



Vladimir Goncharenko, the head of non-rigid pavements of State Road Research

Institute, and Vitaliy Stëzhka, the first deputy director of SOEs DorTsentr, had very interesting presentations that gave a lot of interesting and useful information to young researchers and scientists.

Students and young scientists presented results of their research works. The works were performed on the basis of data, information and skills obtained during the training classes organized in the workplace. The following undergraduates and graduate students presented preliminary results of their works: Sergey Savenko, Daniel Misyura, Olga Nikolaenko, Alina Kvatadze, Veronica Plotnikova, Bogdan Kolesnik, Yuri Lozenko, Andrew Yarema, Ivan Rakovic, Sergei Prikhodko and Yury Avramenko. Experienced scientists listened to their presentations and led detailed discussions with them on topics of their research. The scientists liked ideas presented by young researchers and expressed hope that they would have enough time to transform them into interesting scientific results.

During the workshop, the main prospects for implementation and preliminary results of the CERES project at National Transport University and in Ukraine in general were discussed. The discussion was attended by teachers of National Transport University – Associate Prof. Olena Usichenko and Associate Prof. Victoria Mironova.

Young researchers and representatives of the companies emphasized the importance of establishing links between centers of support of scientific schools and industrial enterprises. Such links have a big potential because they allow preparing common projects between universities and industrial partners that can be led by teachers and other employees of universities and solved by students and young researchers during their stay at universities. This brings benefits to both companies and students. Companies get an opportunity to use capacity of research institutions in their business while students and young researchers can participate in solving practical problems.



The Third Coordination Meeting of the CERES Project

The third coordination meeting of the CERES project was held at Belarusian State University of Informatics and Radioelectronics on March 23-24, 2015. Representatives of all members of the consortium participated to discuss the progress in the project implementation, its problems and challenges, as well as first successes and results. The meeting was split into several sessions:

- Session 1: Project implementation (Moderator: Elena Zhivitskaya, BSUIR)
- Session 2: Partners presentations (Moderator: Karol Matiasko, ZU)
- Session 3: Intermediate Report Preparation (Moderator: Viachaslau Nikitsin, UPB)
- Session 4: Discussion on the Project Development (Moderator: Vitaly Levashenko, ZU)
- Session 5: Portal Realization. Training course (Teacher: Karol Matiasko, ZU)



The CERES managers were acquainted with the main features of the CERES Portal during the meeting. Prof. Karol Matiasko led several teaching lectures and presented current state of implementation of the portal. The meeting also included a tour to the High-Tech Park (a special economic zone with a special tax and legal regime in Belarus, contributing to the favorable and successful development of IT business). Several individual project discussions were also a part of the meeting. The participants noted that the level of cooperation between young scientists and representatives of enterprises in various ownership forms was not enough in the region. This confirmed that development of web-platforms for cooperation between various companies (potential employers), educational institutions and young scientists (potential executors) was very timely and had a high potential in the region.

Synergy of TEMPUS Projects CERES and ECOTESY at Zaporizhzhya National Technical University

Joint meeting of the TEMPUS projects CERES and ECOTESY was held on May 22, 2015 at ZNTU. This joint meeting was dedicated to finding effective ways to solve problems for achieving the main goals of these TEMPUS projects. Participants



discussed common issues and challenges in the implementation of latest technologies in the field of education and science. Besides the teachers and the researchers, the students and young researchers of Software Department of ZNTU took part in the meeting. As in the case of the third coordination meeting of the CERES project, participants noted that the cooperation between young scientists and representatives of enterprises was not enough, what underlined the importance of development of web platforms for cooperation between various companies (potential employers), educational institutions and young scientists (potential executors).

Prof. Sergey Subbotin and Associate Prof. Andriy Oliinyk from the Software Department reported on the CERES Portal implementation. After implementation, the portal would allow to improve the conditions for research of young scientists in accordance with innovation concepts as well as the implementation of a partnership program between enterprises and universities. Development and implementation of such a portal would help practical implementation of new ideas of young scientists, transfer of knowledge between representatives of companies and researchers, as well as search for potential customers and executors of different projects. Associate Prof. Dmitry Pavlenko from Department of Aviation Engine Technology of ZNTU spoke about the creation of a single vertically integrated system for innovative development of the techno-sphere ecosystems with a full cycle (study – research – production – operation/maintenance – utilization). Such a system was implemented in the frame of the TEMPUS project *Interregional Network for Innovative Development of Ecosystems Techno sphere* (ECOTESY, reg. no.: 544498-TEMPUS-2013-SE-JPHES).

The meeting participants agreed on future cooperation in the implementation of TEMPUS projects and dissemination of their results in the form of seminars, conferences, trainings and meetings with representatives of enterprises in the region. As they noted, participation of university staff in the implementation of the TEMPUS projects would allow the introduction of modern European methods and innovative pedagogical technologies into the educational process and bring young researchers closer to the practical needs of enterprises, science and production, what would form a single triangle of knowledge.

CERES Workshop: Modern Experience on Young Researchers' Organization

The workshop on CERES: *Modern Experience on Young Researcher's Organization* was held at University of Žilina on July 7-9, 2015. The main aim of the workshop was to bring together young researches, developers, teachers from academy as well as industry working in all areas of information technologies. The workshop was organized in the frame of conference on *Information and Digital Technologies (IDT 2015)* in accordance with WP 3.2.

Different works of young researchers were presented in the workshop. Best papers of young researchers were discussed at 12 oral sections and 3 poster sections and were included into the IDT 2015 conference proceedings. Note, that the proceedings were indexed in well-known scientific repositories, such as Scopus and Web of Science. It guaranteed increasing of potential of young researchers. In the plenary sessions, distinguished experts gave a review of the future perspectives in their areas. The following experts presented own plenary lectures at the workshop: Prof. Krzysztof Kołowrocki (Poland), Prof. Radim Bris (Czech Republic), Prof. Michitaka Kameyama (Japan), Dr. Iosif Androulidakis (Greece) and Dr. Krzysztof Pancierz (Poland).

Joint CERES and GreenCo (Green Computing and Communications, reg. no. 530270-TEMPUS-1-2012-JPCR) TEMPUS inter-project meeting was also organized. This meeting focused on training young researchers from both projects and establishing the cooperation between them.

Beside the working field, several cultural and social events were held in pleasant atmosphere. Participants visited to historical attractions – Wedding Palace in Bytča and famous Orava Castle.



The First Issue of Central European Researchers Journal



The first issue of *Central European Researchers Journal* (*CERES Journal*) was published in July 2015. Coeditors of the journal are Prof. Vyacheslav Kharchenko (Radyi Corp.) and Prof. Elena Zaitseva (University of Žilina). They formed journal editorial board, formalized publications demands, defined review rules and organized technical support of following publishing. CERES Journal was established accordingly with WP 2.1. Registration number of CERES Journal is ISSN 2453-7314.

The journal focuses on publishing original scientific and professional articles of young researchers that have not been published previously. The journal deals with a wide range of aspects of computer systems. Topics of interest include, but are not limited to:

- Digital signal processing
- Communication and control systems and networks
- Hardware and software solutions
- Electronic Health Records and Medical Databases
- Medical Image Analysis and Biomedical Visualization
- Telemedicine, Tele-health and Remote Monitoring
- Reliability analysis and risk estimation
- Testing and fault-tolerant systems
- Human factor, Risk and hazard analysis
- Software reliability
- Computer-Aided Diagnosis
- Computational Intelligence
- Data mining and Knowledge discovery
- Education, e-learning, etc.

Central European Researchers Journal

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About CERES journal
Central European Researchers Journal (CERES journal) cover different areas and problems of engineering. The main topics of the journal concern modern information technologies, computer systems, critical infrastructures, etc. their modelling, analysis, estimation, performance, reliability. The principal goal of CERES journal is the support of young researchers, their investigation by the preparation of stable platform for publications and presentations with active distribution. Therefore CERES journal is on-line journal with free access. Publications of PhD students, post-doctoral students and young researchers will be disseminated in the journal. Review articles and methodological presentation of well-known researchers and engineers will be presented too.

Topics of interest includes:
- Digital signal processing
- Communication and control systems and networks
- Hardware and software solutions
- Innovative eHealth, Applications and Products
- Electronic Health Records and Medical Databases
- Medical Image Analysis and Biomedical Visualization
- Computer-Aided Diagnosis
- Telemedicine, Telehealth and Remote Monitoring
- Reliability analysis and risk estimation
- Testing and fault tolerant systems
- Accident and incident investigation
- Human factor
- Risk and hazard analysis
- Software reliability
- Computational Intelligence
- Data mining and Knowledge discovery
- Education, e-learning

Manuscript requirements
Manuscript optimum length is 12 pages including figures, tables and references.
Language manuscript must be written in English and must be prepared in journal template (Word or Latex)

Supported by project
An international peer-reviewed scientific journal published since 2015 with support of the project Centres of Excellence for young Researchers (CERES) - 54413P-TMPUS-1-2015-1-GK-TMPUS-IPHS. The journal is platform for publications presentation of result in work of students, PhD students and young researchers.

The journal is published biannually and accepts manuscript with length until 12 full pages. The editorial board supports open web-access and free publication charge. Language of manuscripts is English. Submission system has support for (a) accepting and registration of young researchers' papers; and (b) managing the reviewing process. Each of the published paper is reviewed by the members of journal editorial board and invited reviewers.

Six issues have been published during implementation of the CERES project until December 2017. Most of the papers are original results of young researchers that were obtained with partial support of the CERES project.

The Fourth Coordination and Working Meeting of the CERES Project at National Transport University

More than 25 representatives of project partners participated at these events on October 29-30, 2015. Vice-rector of NTU Prof. Alexander Gryshchuk and the project coordinator Prof. Karol Matiasko provided a brief introduction to the meeting's agenda and CERES project. The NTU's strategy for young researchers was presented in a speech by Prof. Olena Slavinska. CERES participants presented achievements of own organizations in the project implementation. Weak points of the project were identified. A strategy of the project implementation for the upcoming period was formed. Joint meeting of representatives of two TEMPUS project (FKTBUM and CERES) was organized. These projects oriented to create conditions for organization and support of cooperation of universities with enterprises. Overlaps of CERES and FKTBUM projects were presented by Dr. Guido Kaufmann and Prof. Vitaly Levashenko. It was noted that perspectives and potential of cooperation between FKTBUM and CERES teams would allow exchanging experiences.

An instrument for individual measurement of the quality of the project's implementation at each partner university was developed. This instrument would be used for the elaboration of the final project report. Quality control was realized at these meeting. The qualitative and quantitative indices about the project progress and mobility were calculated. Quality control report was prepared. Dr. Guido Kaufmann, the quality control officer, analyzed obtained results.



Training courses and teaching CERES managers were accomplished according to the agenda. The CERES managers obtained knowledge about potential of CERES platform, support of young researchers in EU countries and other grant schemes for support cooperation with enterprises. Visit to “M.P. Shulgin State Road Research Institute State enterprise” was realized.

Seminar on Modern Methods and Technologies for the Design, Construction, Maintenance of Roads and Structures

International scientific seminar *Modern Methods and Technologies for the Design, Construction and Operation of Roads and Structures on Them* was held within the second working meeting of participants and partners of the CERES project. The seminar was organized by National Transport University in cooperation with State Agency of highways of Ukraine and “M.P. Shulgin State Road Research Institute State enterprise – DerzhdorNDI”.



The seminar presented the results of research of young scientists dealing with problems of road transport. Young scientists were from departments of National Transport University and from state enterprise DerzhdorNDI. More than 50 active young researchers and representatives of industry attended this seminar. Key topics of the seminar were: (a) modern design methods of transportation facilities; (b) new technologies for construction and operation of state and municipal roads; (c) harmonization of the regulatory framework in the EU road transport sector of Ukraine.

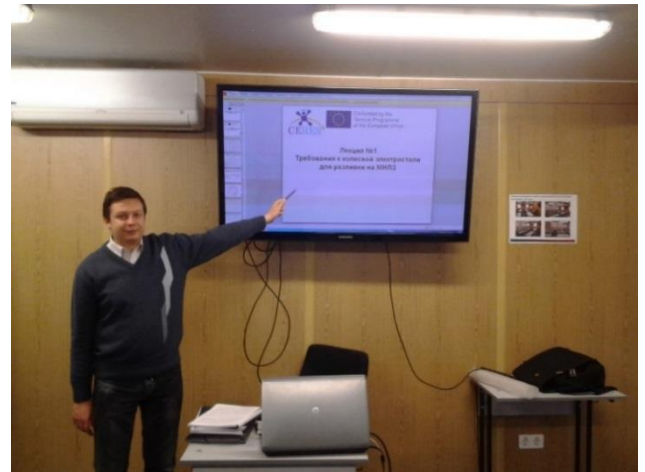


Discussion about support of young researchers and their involvement in cooperation with enterprises were organized. Discussions on problems and prospects in improving the methods and techniques of design, construction and operation of transport facilities were attended by representatives of University of Žilina, University of Paderborn, State University of Informatics and Radio-electronic,

Francisk Skorina Gomel State University, Brest State Technical University, United Institute of Informatics Problems, Intellectual processors Ltd., National Transport University, Zaporizhzhya National Technical University, National Metallurgical Academy of Ukraine and Radiy Research Company. Participants concluded that young scientists in Ukraine have sufficient capacity, and they are able to put into practice proposals on further development of road sector. However, as they noted, the CERES Portal for deepening cooperation between universities, companies and young researchers can significantly increase their potential.

Lectures by CERES Manager of NMAU at Industrial Plant “Dniprostal”

In the frame of the CERES project and based on the invitation of the Center of Technical Training of LLC MP “Dniprostal”, Associate Prof. Oleksandr Zhadanos from Department of Electrometallurgy of the National Metallurgical Academy of Ukraine (CERES-manager, NMAU) delivered a series of lectures for the students enrolled in the “Dniprostal” project ACADEMY OF STEEL. The lectures were given from October 26 to October 30, 2015 at the Center of Technical Training of LLC MP “Dniprostal” – Drive to Knowledge.



11 students participating in project ACADEMY OF STEEL attended the lectures. The topic of the lectures was *Basics of Steel Quality in the Conditions of LLC “Interpipe Steel” Productions*. Students gained knowledge about:

- requirements for wheel electric steel casting in the MNLZ* to CCM,
- the modern concept of producing high-quality steel products,
- smelting metal precursor in electric arc furnaces,
- technology of furnace treatment of wheel and tubular steel,
- the casting of wheel and steel pipe casters.

Lectures significantly helped to increase the effectiveness of the theoretical knowledge and practical skills of students and to improve research potential and future achievements of young researchers. The CERES manager promoted objectives of the project and information about the CERES Portal, which is one of the best visible outputs of the project. Lectures became a good base for further scientific research of students. During the discussions, the students appreciated that Ukrainian institutions participated in projects as CERES because such kind of projects can help them to employ in high productive industry and allow them actively participate in solving practical problems of manufacturing processes during their study.

International Conference on Road Safety: Legal and Organizational Aspects at National Transport University



The *X International Scientific and Practical Conference on Road Safety: Legal and Organizational Aspects* was held at National Transport University on November 13, 2015. This conference was organized under the CERES project. More than 50 participants took part at the conference.

Participants of the conference were young scientists, practitioners and experts in the field of road safety, as well as scientific and teaching staff and graduate students of higher educational institutions. The purpose of the conference was to enable young scientists to present the results of their research and obtain information about possible directions for further work taking into account the needs of Ukrainian enterprises. The works of young scientists were prepared and published electronically under the supervision of the CERES project participants. The conference participants received certificates of participation.

In turn, representatives of enterprises that also took part in the conference were given the opportunity to express their interest in developing young scientists in the field of organization and traffic safety to enhance the innovative component in their work. During the conference, the most important areas for further research of young scientists were identified. The leaders of the conference invited young researchers to find solutions that would allow enhancing the efficiency of the industry of Ukraine and asked them to actively participate in solving urgent problems of road economy of the country. They expressed hope that young researchers would be able to bring new inspiring and innovative ideas with a lot of benefits for the whole country.



Conference of Young Scientists and Students on Modern Problems of Mathematics and Computer Engineering at Brest State Technical University

The IX Republican Conference of Young Scientists and Students on Modern Problems of Mathematics and Computer Engineering was held at Brest State Technical University on November 19-21, 2015. Participants of the conference were young scientists, practitioners and experts in fields of intelligent data processing technology, modern problems of



robotics, analysis and modeling of complex systems, electronic information technology in scientific and applied research, and analytical and numerical methods studies in mathematics and its applications. The students participating in the conference acquired new information and deepened their skills in these fields.

Students and bachelors from Brest State Technical University made a lot of reports under supervision of the CERES project experts Dr. Pavel Kachurka, Dr. Sergey Parfamuk, Dr. Valery Kafanau, Dr. Sergey Bezobrazov, and Mr. Valery Kasyanik.



Dr. Pavel Kachurka, who was the coordinator of the CERES project for Brest State Technical University, made a plenary presentation on topic *Centers of Excellence for Young Scientists: Theory and Practice*. He told about the basic ideas of the CERES project and underlined its importance. He also described

the main outputs of the project that would be CERES Journal aiming to publish results of young researchers and the CERES Portal. As he noted, the main purpose of the CERES portal was to create a common platform for universities and companies. In case of universities, it would make easier to get to projects of industrial companies. In case of companies, it would allow them to use research potential of universities. Its main benefit for students would be a possibility to participate in solving real problems during their study.

International Conference Youth in Science 2015

United Institute of Informatics Problems of the National Academy of Sciences (NAS) of Belarus, as industrial partner of CERES project together with the Council of Young Scientists of the National Academy of Sciences of Belarus organized the annual international scientific conference *Youth in Science 2015* which was held in Minsk from December 1 till December 4, 2015 within the framework of the First Eurasian Forum of Young Scientists (YES-Forum).

Young scientists (including post-graduate students) and students were invited to participate in the conference. Participants could submit papers in several fields. Young scientists (including undergraduates and graduate students) could participate with scientific contributions in the following sections:

- Agricultural sciences;
- Biological sciences;
- Humanities and Arts;
- Medical sciences;
- Physics, mathematics and computer science;
- Physical and technical sciences;
- Chemistry and Earth Sciences.



Students of secondary and secondary special education institutions could participate in the following sections:

- Natural science disciplines (students);
- Humanitarian disciplines (students).

Based on the planned work, the activities performed in the frame of the CERES project were integrated into the preparation process of the conference. The project took over organization of two major sections – “physics, mathematics” and “information technologies”. These sections were held in two locations in a parallel mode. The first location was Institute of Physics where section on mathematics and physics was held under the supervision of Prof. Tikhonov Sergey, a corresponding member of NAS of Belarus. The second was Institute of Information Technologies where section on information technologies was organized. The chairman of the section was Prof. Alexander Tuzikov, a corresponding member of NAS of Belarus.

The program of the CERES sections included 45 reports, which were presented by participants from educational institutions and research and production centers of Belarus and Ukraine. The best papers were invited to be published in CERES Journal.

Workshop in the Framework of the Conference on Distance Learning – Education Environment of XXI Century



Very timely conference on *Distance Learning – Education Environment of XXI Century* was held at Belarusian State University of Informatics and Radioelectronics on December 3, 2015. The main goal of this event was to formalize modern approaches to increase teaching potential of teachers and young researchers and to exchange new ideas in

developing universities potential. The special workshop was organized in the frame of this conference. The moderator of the workshop was Dr. Natallia Lapitskaya, the head of Software Engineering Department of Belarusian State University of Informatics and Radioelectronics.

The workshop was attended by representatives of CERES project partners from the following institutions: University of Žilina, National Transport University, National Metallurgical Academy, Radiy Corp., Gomel State University, United Institute of Informatics Problems and Intellectual Processors Ltd.

Participants from the CERES project presented own point of view on several current issues in education and teaching of young researchers. CERES participants together with representatives of organizations not involved in the CERES consortium discussed current trends in cooperation between young researchers with industrial enterprises. Young researchers from the CERES project



published short remarks of own works in the proceedings of the conference. Access to the conference proceedings is available on URL http://www.bsuir.by/m/12_113783_1_98115.zip.

Visit of Representatives of Zaporizhzhya National Technical University to the Brno University of Technology

The visit of representatives of ZNTU to Brno University of Technology (Czech Republic) was held on December 8-10, 2015. This visit should be seen as the realization of the tasks planning at the work package WP1.1. The main purpose of the visit was to familiarize the representatives of ZNTU with modern methods of organizing and supporting research of young scientists in European universities and with the requirements of the European standards of education to the research of young scientists. The main tasks of the visit were:

- to present ZNTU activities in the CERES project;
- to discuss the CERES project progress in BUT and ZNTU;
- to discuss modern trends in young researches in Czech Republic and Ukraine;
- to present results of young researches from ZNTU;
- to discuss positive and negative aspects of education system in Czech Republic with young researchers at BUT;
- to study BUT's experience on work with young researches.

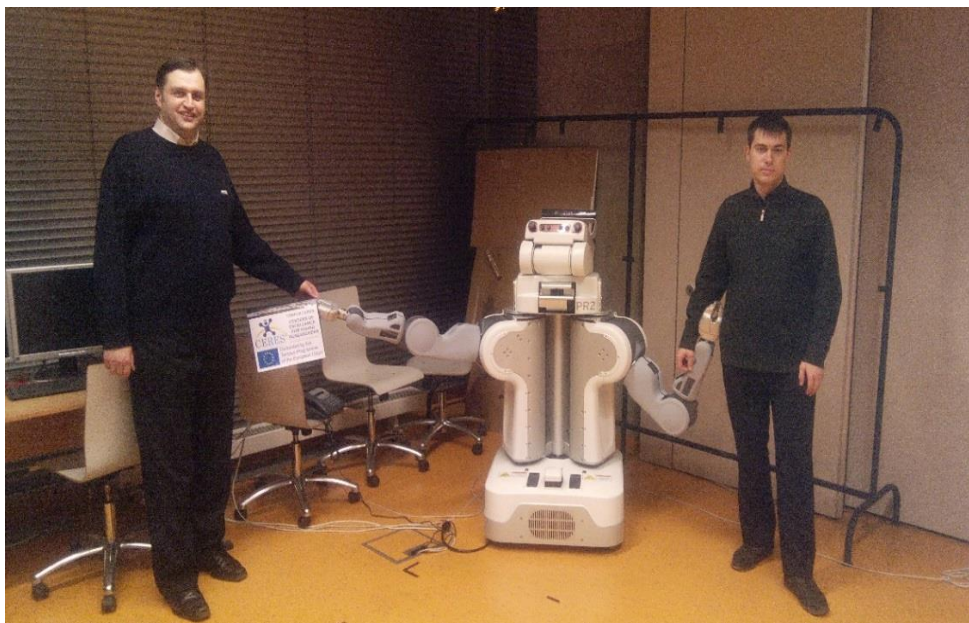
At the meeting, Prof. Petr Hanacek, the head of the Department of Intelligent Systems of Faculty of Information Technology of BUT, and Dr. Martin Drahansky, the coordinator of the CERES project for BUT, made a welcoming speech to the participants of the project. For ZNTU, Prof. Sergey Subbotin and Associate Prof. Andrii Oliinyk took part in the meeting. The participants discussed the current issues of project implementation in the European Union and Ukraine, exchanged the experience in the organization of scientific activity of young scientists and evaluated the effectiveness of the implementation of CERES project and the prospects for its further implementation.

At the meeting, various discussions were held, such as discussion on the place and role of young scientists in European education systems, discussion on modern trends in research in fields of applied informatics in Czech Republic and Ukraine.



Dr. Martin Drahansky introduced the methods of organization and support of young scientists in BUT, demonstrating the logistical base and the laboratory of the Department of Intelligent Systems of Faculty of Information Technology. Dr. Drahansky reported on the research of young scientists of the faculty associated with the development and implementation of intelligent sensors, biomedical systems, hardware and software for pattern recognition and signal processing, face and voice recognition, and usage of DNA analysis in biometrics.

Prof. Sergey Subbotin and Associate Prof. Andrii Oliinyk told about the course of the project, reported on the activities of the Council of young scientists and specialists in ZNTU and ZNTU cooperation with industrial enterprises in the region. The results of young researches from ZNTU were also presented and described at the meeting.



The participants of the meeting also discussed the place and role of young researchers in the modern European education system, took part in the discussion on the course of CERES project, set goals for the near future, took an opportunity to work in the library

of the university, as well as to familiarize with the material and technical base of the Faculty of Information Technology of BUT. Representatives of BUT talked about ways how to attract young scientists to work on real projects of Czech companies in the region since they have a lot of benefits not only for students but also for companies.

The cultural program included a visit to the Technical Museum of Brno, which offers a large number of exhibits, reflecting the development of science and technology from the earliest times to the present.

As the result of the meeting, an action plan for the future activities on joint communication under framework of the CERES project was discussed. It was planned to organize joint training of Ukrainian post-graduate students on the basis of the Brno University of Technology. Following the meeting, the participants were awarded certificates of internships, agreed on future cooperation and development of common activities in the frame of the project.

Teaching visit of Representatives of University of Žilina to Belarusian State University of Informatics and Radioelectronics and Francisk Skorina Gomel State University

In accordance with activities of WP 3.2 *International and technical support of CERES*, two teachers from University of Žilina (prof. Vitaly Levashenko and prof. Elena Zaitseva) made visit to Belarusian State University of Informatics and Radioelectronics (BSUIR) and Francisk Skorina Gomel State University (GSU). The visit was made from January 25 till January 29, 2016. The main goals of the visit were (a) presentation of modern trends and achievements in European support of young researchers and (b) organization of cooperation between different research teams of BSUIR, GSU and University of Žilina (ZU). Several lectures were delivered during this visit. The lectures were oriented to young researchers, students, teachers and the university's administrative staff. During the lectures, the lecturers from University of Žilina presented their teams and original results of their own research.



The main objectives of the lectures were: (a) organization of cooperation and support of young researchers with research teams of University of Žilina; (b) familiarization of young researchers with different variants of education in Slovakia (as bachelor, master and PhD student); (c) informing young researchers, students and teachers about possibilities of preparing proposals of various projects.



Prof. Vitaly Levashenko had the following lectures at BSUIR: (a) *ZU Team Presentation*; (b) *Positive Aspects of Education System in Slovakia (as a Member State of European Union)*; (c) *Knowledge Representation*; and finally (d) *Knowledge discovery, Information and Decision Tree*. More than 230 students, young researchers and teachers from BSUIR attended these lectures.



Prof. Elena Zaitseva led the next lectures at GSU: (a) *Research Potential of ZU Team*; (b) *Positive Aspects of Education System in Slovakia*; (c) *Systems of Grants for Support of Young Researchers*. Near 100 participants of GSU attended these lectures. Discussion of main aspects of these lectures with young researchers of BSUIR and GSU continued after each lecture. Young researchers had questions on research projects that ZU team participated in and were very interested in European education system.



Two small local coordination meetings with CERES project participants were organized during the visit (January 25, 2016 and January 29, 2016). Preparation of financial documents for payment of staff costs (correct process of filling project timesheets, calculation of daily rate for staff costs, etc.) was considered. Possibilities of reimbursement of travel expenses of project participants and typical mistakes in financial documents, criteria of CERES project efficiency and future project development were analyzed at these meetings with administrative staff of BSUIR. Current tasks of CERES project development was discussed between representatives of ZU, BSUIR and GSU at the local meetings (January 28, 2016).

Conference for Young Researchers and Students at Francisk Skorina Gomel State University



The conference on *Actual Problems of Physics and Engineering* was held at Francisk Skorina Gomel State University on April 21-22, 2016. The conference was opened by Prof. Aliaksandr Rahachou, the rector of the university and corresponding member of National Academy of Sciences of Belarus. In his greeting message he emphasized the urgency of initiatives allowing engaging

young students in scientific research actively, which agreed with one of the most important tasks of the CERES project. More than 60 young researchers participated at this conference. Under the CERES project, five plenary presentations were prepared:

- Vitaly Levashenko and Elena Zaitseva (University of Žilina, Slovakia): *CERES as a Platform for the Support of Young Scientists*;
- Miroslav Kvassay (University of Žilina, Slovakia): *Young Researchers in Informatics and Their Research Activities*;
- Vyacheslav Kharchenko, Eugene Bebashko and Andrei Kovalenko (Radiy Corp., Ukraine): *Radiy: Research Activities and the Support of Young Scientists*;
- Dmitry Kovalenko: *Scientific Research in the Faculty of Physics* (Gomel State University, Belarus);
- Yury Gryshachkin: *Determination of Resonance States for Two-Particle Quantum Systems* (Gomel State University, Belarus).

Thanks to the CERES project, the conference attracted presenters from much wider region than in the previous years. Results of students from Minsk, Gomel, Brest, Grodna, Magiliou, Mazyr, Kyiv, Kharkov, Dnepr, Zaporizhzhya, Kirovograd and Žilina were presented. Heads of conference sections appreciated the high quality of reports of guests. The best papers were recommended for publication in CERES Journal.



The Fifth Coordination Meeting of the CERES Project and Visit to Joint-Stock Company Gomel Technopark



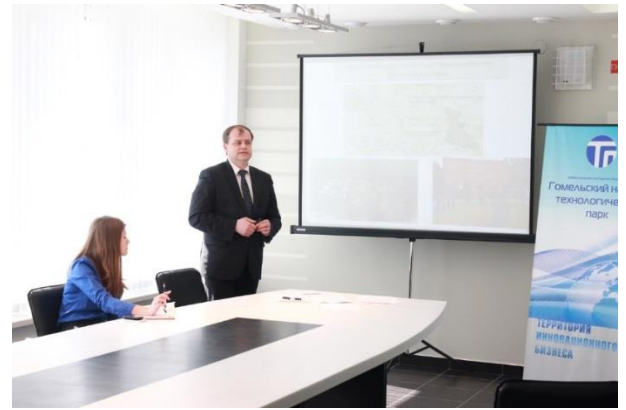
The fifth CERES coordination meeting was held at Gomel State University on April 22-23, 2016. 26 project participants discussed principal questions of realization of the project. Progress overview and current state of project implementation were presented by project partners. The head of the

programming team Dr. Patrik Hrkut made participants familiar with the structure of CERES Portal. The operational and financial sides of project management were also discussed during the meeting.

Partners of the CERES project visited open joint-stock company *Gomel Technopark* on April 21, 2016. This company is a governmental organization founded by Gomel District Executive Committee. The company represents a classic model of the European industrial park, which is a commercial organization whose primary function is providing office areas to residents of techno-park as well as providing them a range of services for development of innovative businesses such as consulting, information support, business planning, printing services, etc.



Dmitri Morozov, the director of the *Gomel Technopark*, noted in his opening speech that the basic idea of techno-parks is a governmental support and encourage for innovation business. This type of business is one of the most risky types but at the same time one of the most highly profitable and promising businesses from the point of view of the development of markets. By investing in the construction of techno-parks, the state not only creates new work places but also aims at streamline the development process of the real sector of the economy by application of the latest developments and know-how of both Belarusian and foreign scientists. Therefore, in addition to a reduced rent and other supports, the residents of techno-parks also take advantages of a special tax regime established by legal regulation.



Partners of the CERES project wondered about the most important indicator of the efficiency of a techno-park. The director answered “*It is the number of successful innovative enterprises emerged from the techno-park, and the number of work places created by them*”. This indicator is very close to CERES one. Thus the basic assessment of the activity of techno-park for a given period of time is successful activity of its residents (partners) – small innovative companies. The success can be measured by growing their sales, introducing new and innovative scientific and technical products or products with improved characteristics, as well as by the number of new work places and, as a result, by the increase in budget receipts.

Discussions led at the techno-park were very interesting and fruitful. CERES participants discussed also opportunities provided by the administration of *Gomel Technopark* and offered various activities that they would implement in their regions. They were the following:

- assistance in creating of production with new technologies or industries based on developing IT production;
- assistance in implementing foreign-economic activities in order to support products on the external market;
- lease of tangible and intangible assets, including offices, furniture and office equipment;
- providing coverage of the activity of partners in mass media;
- providing a wide range of services such as consulting, information support, business planning, printing services, organizing of workshops, seminars and other events.



Workshop on CERES at Brest State Technical University

A workshop on international cooperation with participation of Prof. Klaus Rosenthal, the head of Department of Marketing from Faculty of Economics of University of Paderborn (Germany) was held at Brest State Technical University on April 26, 2016. The workshop was organized within the cooperation of Brest State Technical University and University of Paderborn in the frame of TEMPUS project *CERES: Centers of Excellence for Young Researchers*.



Prof. Klaus Rosenthal as the coordinator of 17 national, regional and international European projects at University of Paderborn on the topics of marketing, transport, management, logistics, tourism, as well as e-learning and

networking shared with participants of the workshop his experiences in the field of project management and modern trends in the field of management and marketing. Discussions on potential of mutual cooperation in this and similar areas were also part of the workshop. Both sides expressed interest in deepening their cooperation.

After finishing the workshop, the organizing team prepared for Prof. Klaus Rosenthal a small tour of the university.

Firstly, they visited Faculty of Economics and made him familiar with research of the



faculty. Then, they went to laboratory of robotics where they showed him problems on which students and young scientists worked and familiarized him with several interesting solutions found at the university.

Workshop on CERES: Aspects of Project Activities Implementation in the Scope of Modern Industry Demands

CERES workshop *Aspects of Project Activities Implementation in the Scope of Modern Industry Demands* was held during May 19-20, 2016. The workshop was organized under the conference on *DEpendable Systems, SERvices and Technologies (DESSERT)*. The main goal of that event was to discuss current trends in modern industry, formalize possibilities and models of Business-to-Science and Science-to-Business cooperation, their potential features and inherent advantages. Also, research and development activities of young researchers inside and outside the CERES consortium were analyzed and discussed.



During the workshop various aspects and current problems of CERES project implementation, including issues related to implementation of the CERES Portal, were discussed. Representatives of teams from University of Žilina, RPC Radiy and National Transport University prepared a series of presentations devoted to those and other issues. The representatives also presented current CERES-related activities to other participants of the conference. In the scope of the workshop, Radiy's team together with colleagues discussed on the following open questions:

- Research and technical trends in the Ukrainian market. How to improve the national market of IT technologies?
- Perspectives of IT research in modern IT enterprises and universities. How to speed up the development of IT market and cooperation with enterprises?
- Investment and public-private partnership in IT. Which role and activities of young researchers and engineers are most effective?
- Cooperation of universities and IT industry. How can be used world and European experiences to increase cooperation in Ukraine?

In the frame of these and similar questions, RPC Radiy presented its experiences with part-time PhD study and theses defended by young researchers on supporting universities and with creation of academia-industry ecosystem.

Summer School for Young Researchers at Zaporizhzhya National Technical University

The Summer School for Young Researchers on Modern Trends in Young Education was held from September 21 to September 26, 2016. This school was organized as a part of the conference of young researchers. The total number of participants was more than 150 people, including more than 50 people, who took part in the summer school to deepen their knowledge and skills. Most participants of the summer school were young researchers.



The rector of ZNTU, Prof. Sergey Byelikov, opened the summer school. In his speech, he paid special attention to issues of international cooperation, underlined the importance of TEMPUS and Erasmus+ projects for development and future progress of the university and for establishing contacts with other foreign universities.

The summer school was organized in the frame of the CERES project. It was attended by representatives of University of Žilina, Belarusian State University of Informatics and Radioelectronics, Gomel State University, Brest State Technical University, Intellectual processors Ltd., National Transport University, National Metallurgical Academy and participants from different Departments of Zaporizhzhya National Technical University (Software Department, Computer Systems and Networks Department, System Analysis and Computational Mathematics Department, Information Protection Department and others). Researchers and teachers from these universities delivered a lot of lectures to students and colleagues, told about achievements and problems in support



of young researchers, highlighted priority directions in research at partner universities and accented cooperation with industrial enterprises.

Students, post-graduate students and young researchers from organizations of CERES consortium also took part in the school. They listened to the lectures of experienced researchers and teachers, and they prepared own presentations which showed results of their research. An important element of the school was discussions between

participants. In the discussions, representatives of Radiy and Technical University of Brno also took part.



The contributions of participants of the summer school were published in the conference proceedings. The best papers were recommended for publication in international journals *Central European Researchers Journal* (<http://ceres-journal.eu/>) and *Radioelectronics, Informatics, Management* (<http://ric.zntu.edu.ua>).

Representatives of the CERES project coordinator, Prof. Vitaly Levashenko and Brita Endersova, discussed with representatives of the partner universities the current implementation of the CERES project, its management and financial reporting.

Participants of the school had also an opportunity to get acquainted with the city of Zaporizhzhya, its historical monuments, museums and leading enterprises. The most interesting events were excursions to Khortytsya Island, to the historical and memorial complex Zaporizhzhya Oak, to the enterprise Khortits, to the beer-nonalcoholic plant Slavutich and to the museum of technology Motor Sich. These visits allowed young researchers to learn about the work of modern industrial enterprises and to familiarize with high-tech equipment and production processes.



Lectures of CERES Manager for International Students

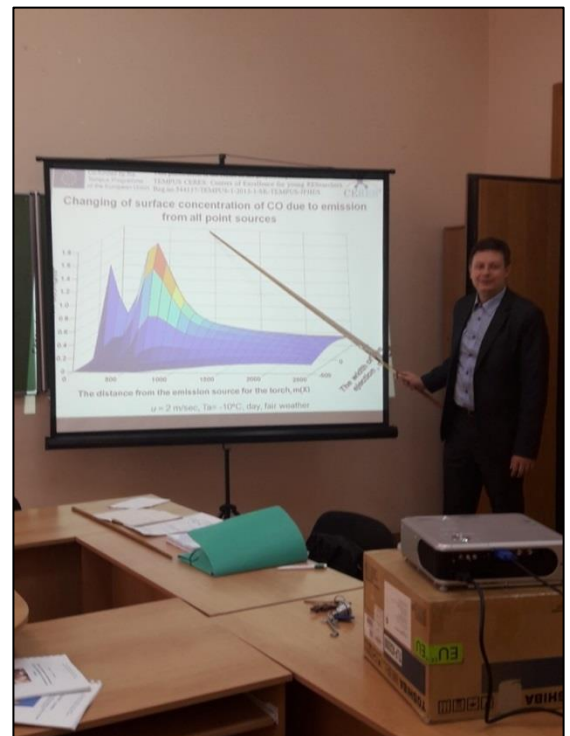
On September 27 – 28, 2016, a member of Department of Electrometallurgy of National Metallurgical Academy of Ukraine (NMAU), Associate Prof. Oleksandr Zhadanos (CERES-manager, NMAU), with support of the “Scientific Information Centre for Youth” (CERES), delivered lectures



for international students from Akita University (Japan) who visited NMAU. The lectures were given in English, and they covered the following topics:

1. *Theoretical Bases of Modeling of Dust and Gas Emissions Spreading;*
2. *Mathematical Modeling of Spread of Dust and Gas Emissions Released due to Manganese Ferroalloys Production;*
3. *The Main Theoretical and Technological Features of the Silicon Carbide Manufacturing Process in the Acheson Furnace;*
4. *Estimating the Impact of Meteorological Factors on the Distribution of Dust and Gas Emissions;*
5. *The Mathematical Model of Heat Power Processes in Acheson Furnace during the Production of Silicon Carbide;*
6. *The Structure of Automatic Process Control System for Process of Silicon Carbide Production.*

The given lectures correlated with the main objectives of the CERES project and served for the training of targeted groups. In this case, the group was young researchers from Japan. Thanks to these lectures, they deepened their knowledge in a specific problem, and they also gained information about the CERES project and support of young researchers in Europe. It is important to note that such and similar events contribute to the development of international relations and cooperation in research and education.



Technical Workshops on CERES Portal Implementation at National Metallurgical Academy of Ukraine and Belarus State University of Informatics and Radioelectronics

Two national technical workshops on the implementation of the CERES Portal were organized at NMAU (Dnipro, Ukraine) during November 1-2, 2016 and at BSUIR on November 16, 2016. These workshops were organized within WP 2.3 *CERES improvement*.



The CERES Portal was an essential part of CERES project, and it aimed to create the research infrastructure integrating target groups and ensuring the compliance of research projects of young researchers with international counterparts and with the needs of industry.

It is assumed that the portal will link three groups of users: representatives of industrial organizations, universities and young researchers. It is expected that representatives of industry will formulate research topics (task, problems and needs), and representatives of universities will analyze the topics and prepare smaller projects that will be solved by students and young researchers. Students / young researchers will have an opportunity to choose the task according to their interests and knowledge.

Representatives of University of Žilina (Slovakia), University of Paderborn (Germany), National Transport University, National Metallurgical Academy of Ukraine and Zaporizhzhya National Technical University participated in the workshop held at NMAU.



Representatives of University of Žilina (Slovakia), Belarussian State University of Informatics and Radioelectronics, Gomel State University, Brest State Technical University, United Institute of Informatics Problems and Intellectual Processors Ltd. took part in the workshop organized at BSUIR.



Each workshop was composed of four similar sections:

- Design and administration of the portal;
- Practical classes on the use of the CERES Portal;
- Brain storming and elaboration of requests for modification of the portal;
- Brain storming on the integration of the portal.

The main outputs of the workshops were following:

- modified versions of the portal;
- new ideas for improvement and simplification of the CERES Portal for users and administrators;
- practical experience in the use of the portal;
- familiarization with technical issues related to the administration of the portal.

During the workshops, a lot of discussions were held. Participants were interested in all the details of the portal and had a lot of interesting questions and inspiring comments. Based on them, several modifications to the portal were proposed. In opinion of the debaters, these changes would make the portal friendlier to the users and make easier its future expansion.

Lectures for Students and Young Researchers at National Metallurgical Academy of Ukraine

Informative lectures about CERES project, the European educational system, research environment for students in Slovakia and potential of scientists from University of Žilina were given by Prof. Vitaly Levashenko to students of National Metallurgical Academy of Ukraine on November 2, 2016. The main goals of these lectures were to familiarize young researchers with CERES potential and organization of future cooperation between different researcher teams from European and Ukrainian universities.



The given lectures covered topics as *CERES as New Platform for Support of Young Researchers* and *Knowledge Discovery in Databases, Knowledge Representation and Decision-Making Support Systems*. More than 20 young researchers and students from NMAU attended the lectures and actively discussed the topics with Prof. Levashenko. Students were very interested in realization of CERES project because they saw it as a project that would allow them to solve real industrial problems during their study.



During the lectures Prof. Levashenko also presented the directions of research at University of Žilina, joint projects, scholarships and grants available for students and young researchers from Partner Countries. Participants noted that preparation and realization of research projects and projects similar to CERES was very important because they had a big potential for establishing cooperation with industrial enterprises.

Working Meeting for Young Researchers and Students at National Transport University

On November 3, 2016, National Transport University hosted a working meeting on implementation of the CERES web-platform in the framework of the CERES project.



A seminar for young researchers (masters and post-graduate students) about possibilities of CERES Portal and project implementation was prepared in the frame of this meeting. Presentations were made by Prof. Vitaly Levashenko, Prof. Olexandr Melnychenko, and Prof. Olena Usychenko. The main topics of the presentations were: (a) *CERES Project Implementation*, (b) *Goals and Objectives of the CERES Project for NTU Activities*, (c) *Functionality of the CERES Portal in Developing the Potential of Young Researchers*.

The participants of the seminar discussed the issues of integrating the web portal into the work of NTU and proposed several solutions to these problems.

Representatives of University of Žilina (Prof. Vitaly Levashenko and Dr. Patrik Hrkut), University of Paderborn (Dr. Vyacheslav Nikitin) and National Transport University (Prof. Mykola Dmytrychenko, Prof. Olexandr Melnychenko, Prof. Olena Slavinska, Prof. Olena Usychenko and Dr. Galina Shevchenko) took part in the working meeting. Current stay in CERES project implementation was considered and discussed in this meeting. Procedures for tender organization and purchase of the hardware were considered. Based on the analysis of these procedures, steps needed for deployment of the CERES Portal were considered.



International Conference for Young Researchers at National Transport University

International conference on *Modern Methods and Technologies of Design, Construction and Maintenance of Roads, Structures on Them and Project Management of Road Development* was held at National Transport University on November 22-25, 2016. The conference was attended by top representatives of education, industry and government institutions: National Transport University (Prof. Mykola Dmytrychenko,



the rector); the State Agency of Highways of Ukraine (Prof. A. Zinca – Head of the Department of Scientific and Technical Research and Dr. A. Yurchenko – Deputy Head of the Department for Investment Policy) and "M.P. Shulgin State Road Research Institute State enterprise" (Prof. V. Nagaichuk – director and Dr. A. Bezugly – deputy director for research work). The conference participants noted the state and prospects for the development of the road economy, scientific and technical support of road works and presented a program for development of

roads in Ukraine.

Young scientists took an active part in the conference. Young researchers from educational institutions, research institutes and representatives of production companies actively discussed the problems and prospects for the development of the road-building complex. The best practices for young researchers of NTU under CERES project were presented in conference sections.

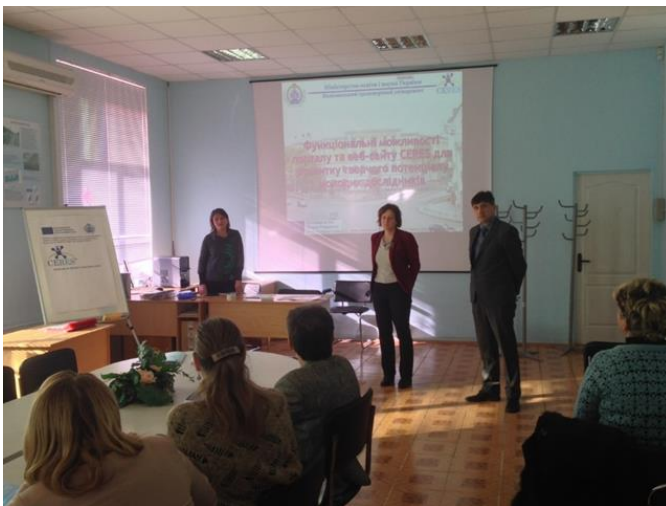


Dissemination Seminars at National Transport University



An important issue in the functioning of the CERES Portal is the dissemination of information about the project among stakeholders. To increase the interest of people at National Transport University and to attract as many users of the portal as possible the participants of the project organized informational seminars at the faculties and departments of National Transport University in December 2016.

More than 50 people took part in three seminars held. Prof. Olena Slavinska spoke



about the goals, objectives of the project, the work done and the efforts of the participants in disseminating the results of the project at the university. Prof. Olexandr Melnychenko informed about attraction of industrial and scientific enterprises to the project. Prof. Olena Usychenko had a presentation on the functionality of the portal and explained the main stages of registration on the portal and posting information on it for young researchers.



Seminar participants were enthusiastic about the CERES project. They realized its potential in deepening cooperation between academy and industry. They also showed big interest in using the CERES portal, which is the integral part of the project. Participants took an active part in discussing the prospects for using and disseminating information about the portal. They liked the idea of web-based platform that

would allow industrial companies to prepare projects led by people from universities and solved by students and young researchers during their study because this would have a lot of benefits for companies as well as students.

Lectures for Students Following the ACADEMY OF STEEL Project given by CERES Manager



Based on the invitation of Technical Training Center of industrial complex DNIPROSTEEL, Associate Prof. Oleksandr Zhadanos (CERES-manager, NMAU) from Department of Electrometallurgy of National Metallurgical Academy of Ukraine delivered lectures for the students following the ACADEMY OF STEEL project. The event was held in the frame of CERES activities at NMAU.

Lectures were given during February 2-10, 2017 at the Technical Training Center of DNIPROSTEEL – Drive to Knowledge. Lectures were attended by 20 students, bachelors and masters, from several Ukrainian universities (National Metallurgical Academy of Ukraine, National Mining University, Prydniprov's'ka Academy of Construction and Architecture, Dnipropetrovsk National University of Railway Transport, etc.). The topic of the given lectures was *The Basics of the High-Quality Steel Products Produced in the Conditions of LLC DNIPROSTEEL*. During the lectures the following topics were reflected:

- requirements of wheel electric steel for casting on continuous casting machine;
- the modern concept for obtaining the high-quality metallurgical products;
- smelting of metal-semi product in electrical arc furnaces;
- technology of the secondary metallurgy for wheel and tube steel;
- casting of wheel and tubular steel on continuous casting machine.

In the frame of the CERES project, the linkage of the theoretical and practical knowledge, assistance and support in research of young scientists were among the objectives of the given lectures. The organizers underlined importance of such and similar events because they strengthen the relations and dialog between universities and industrial enterprises and allow students to find perspective and highly paid job at enterprises.



Workshop on CERES Networking: IT Style at Brest State Technical University

A workshop with participation of Dr. Natallia Lapitskaya, the head of Software Engineering Department of Belarusian State University of Informatics and Radioelectronics, was held at Brest State Technical University on February 16, 2017. CERES experts of the university Dr. Pavel Kachurka and Dr. Sergey Parfamuk represented BSTU at the workshop.



Firstly, Dr. Natallia Lapitskaya talked about her research and research of her colleagues from Software Engineering Department. She talked about experiences with international projects and she also mentioned activities that her students had been involved in.



In the second part of the workshop, Dr. Natallia Lapitskaya and Dr. Pavel Kachurka presented the CERES project and its outcomes to the auditorium – students of Faculty of Electronic Information Systems. Ability of forming scientific researchers' and professional contacts and competency networks was also discussed. Both highlighted ideas of the project and underlined its importance and potential for young researchers.

In the third part of the workshop, the lecturers presented another outcome of the project that is the CERES Portal. They emphasized that the portal would be a perfect platform for cooperation of universities with industrial companies because it allows companies to formulate research projects that will be solved by teachers and students of universities. Thanks to this, companies will be able to use research potential of universities, while students will be allowed to participate in solving real problems during their study. The listeners were involved into discussion on the portal implementation and cooperation between universities within the framework of educational field of information technologies.

During the lectures, it was noted that the CERES project could help in dissemination of best practices of scientific research of young scientists from Minsk universities to regional scientific centers like BSTU. Therefore preparation and participation in such kinds of projects is very important for regional universities.

Master Class on Search Methods in Artificial Intelligence given by Dr. Oscar Sapena Vercher from Polytechnic University of Valencia

Within the initiative of the Scientific Information for Youth and based on the invitation of the Department of Economic Computer Sciences of NMAU, Dr. Oscar Sapena Vercher from Department of Computer Systems of Polytechnic University of Valencia (Spain) led series of lectures to master students at NMAU. Four lectures were given from March 13 to 22, 2017 in the frame of CERES activities at National Metallurgical Academy of Ukraine.



Lectures were delivered in English. During the lectures, Dr. Oscar Sapena shared his experience in scientific research, new methods of artificial intelligence and research achievements of the Polytechnic University of Valencia.

There was one thing that united all students: the desire to acquire new knowledge.



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Для участі в
МАСТЕР – КЛАСІ

**«Informed search methods
in artificial intelligence»**

запрошуються магістри груп
ЕК01-12, АВ01-12, КН01-12,
а також всі бажаючі

Заняття буде проводити
Dr. Oscar Sapena Vercher,
Polytechnic University of Valencia,
Department of Computer Systems

Розклад занять (ауд. 504):
13.03.2017 (понеділок) 13-00 (4 пента)
15.03.2017 (середа) в 13-00 (4 пента)
20.03.2017 (понеділок) в 13-00 (4 пента)
22.03.2017 (середа) в 13-00 (4 пента)

Для участі в роботі мастер-класа до 13.03.2017 р.
необхідно зареєструватися в каб. 326 (кафедра ЕІ),
або по тел. 066-057-47-51,
або по e-mail: super-kafe@yandex.ua

“I think that undergraduates and graduates should improve their knowledge of foreign languages in order to present their research and projects at the international level,” the Spanish scientist advised.

Dr. Oscar Sapena noted that the lectures were aimed at modern computing technologies in teaching. In frames of meetings, the international researcher explored the possibilities of functioning and disseminating the CERES Portal and gave some suggestions for its improvement.

Dr. Oscar Sapena highly appreciated the potential of NMAU students and underlined that such international lectures contribute to the exchange of knowledge and scientific experience between representatives of universities from European Union and Partner Countries.

The Sixth Coordination Meeting at University of Paderborn

The sixth coordination meeting was organized from April 24 to 26, 2017 at University of Paderborn (Germany). The CERES project has tried to improve research conditions of young researchers and to realize program partnerships between enterprises and universities from Ukraine, Belarus and EU countries by implementation of a joint internet research platform. The project was initiated and coordinated by a team from University of Žilina from Slovakia (Prof. Karol Matiasko and Prof. Vitaly Levashenko). University of Paderborn was a leader of European partners of this

TEMPUS project. In Paderborn, Prof. Klaus Rosenthal from Faculty of Business Administration and Economics took responsibility for the CERES project. He and his team prepared and attended the meeting at which teachers, professors and researchers from EU,



Belarusian and Ukrainian universities participated. The main purpose of the meeting was to follow up the results that had been achieved at the universities in Partner Countries and to provide an impression of several research support activities at University of Paderborn. According to this, the agenda of the three-day meeting had been scheduled.

On April 24, 2017 the participants met in order to see presentations on the project's progress in Partner Countries Belarus and Ukraine. The presentations showed that the research portal had been successfully implemented in the Partner Countries and that it is frequently used. However, during the discussions it was noted that the number of users should be increased.



In order to receive some information/inputs on research support at University of Paderborn, the participants met again on April 25. They were welcomed by Prof.

Sureth-Sloane, the dean of the Faculty of Business Administration and Economics, who introduced the participants to the faculty and provided some insights into research organization and activities at the faculty. Her presentation was followed by a further presentation on Technology Transfer and Research cooperation with enterprises at University of Paderborn, delivered by Dr. Sebastian Vogt, the managing director of TecUP. In those days, University of Paderborn was developing and introducing a new learning internet platform named *koaLA Next Generation*. As an example of an interactive learning internet platform Prof. Daniel Beverungen gave a presentation on the current state of *koaLA Next Generation* and explained its main characteristics.

Because the CERES project was approaching its end, many administrative questions had to be discussed and clarified in the framework of the meeting on April 26. So, Prof. Vitaly Levashenko listened to administrative questions of the participants and explained which administrative tasks would have to be fulfilled on short notice. Some aspects of preparation of final project report were considered by Dr. Guido Kaufman. Current situation and use of the CERES Journal were presented by Prof. Elena Zaitseva. Most participants from Slovakia, Belarus and Ukraine never had visited Paderborn before that meeting. Thus an extra small guided tour around the city of Paderborn was organized.



Job Fair 2017 at National Metallurgical Academy of Ukraine

Informative and educational event *Job Fair 2017* was held on April 27, 2017 at National Metallurgical Academy of Ukraine. The Centre for Partnership with Enterprises and Scientific Informational Centre for Youth, established in frames of the CERES project, were the organizers of this event. More than 15 industrial companies from different sectors of economy took part in the event.



Job Fair was aimed, first of all, to the building of links between graduates of higher education institutions and future employers. This corresponded to objectives of the CERES project. Open communication between students and potential employers gave students an opportunity to demonstrate their knowledge and skills and choose job and further career. Representatives of enterprises, companies and organizations had an opportunity to extend their databases with information about candidates and gather a personnel reserve for future. So, the event was useful for both students and companies.



the labor legislation in Ukraine.

Representatives of companies prepared several presentations for students and young researchers during the *Job Fair 2017*. More than 1,200 students from seven NMAU departments took part in the event and more than 100 students attended presentations. Companies presented themselves and discussed on opportunities for work and career development in line with the existing norms of

Job fairs are very important because they essentially help to raise the effectiveness of partnership with enterprises and allow establishing new connections between companies and universities. This agreed with objectives of the CERES project and, therefore, *CERES Info Day* for students was organized under the *Job Fair*. Its purpose was to disseminate information about the project and to promote the CERES Portal.

Workshop INNOCENS and CERES: Implementation. Achievements. Sinergy. Future.

On May 15, 2017 the workshop with participation of the experts from two international cooperation projects CERES and INNOCENS was held at Brest State Technical University. The information about it was presented on CERES BSTU web-site.

The students of Faculty of Electronic Information Systems listened to and took part in discussion with projects' experts: Associate Prof. at IIT Department P. Kachurka, the head of scientific research department, Dr. D. Makaruk, the head of Department of Informatics and Applied Mathematics, and Dr. S. Parfamuk, the head of Technology Transfer Center O. Tarasiuk.

The questions closely connected with implementation of goals and tasks of both projects were discussed in the workshop: scientific research, project, start up and business activities of students, master students and PhD students. The points of influence of projects' interests and the ability of synergy of results were defined.

The most interesting part of the workshop for the auditorium was the information on the financial, technical and administrative support of scientific and business initiatives and on academic mobility. Especially, students were very interested in possibilities of mobility and were also excited by the ideas of the CERES project since its outcomes allow them to participate in solving real problems from industry during their study. This make easier for them to get good job position after finishing the study.



CERES Workshop: Modern Experience on Young Researchers Organization at University of Žilina

Workshop on CERES: Modern Experience on Young Researcher's Organization was held at University of Žilina on July 5-7. This workshop was organized in the frame of conference on *Information and Digital Technologies (IDT 2017)* in accordance with WP 3.3 *Intense training of teachers and young researchers*. Conference IDT 2017 provided a forum for presentation and discussion of research contributions covering theories and methods in fields of information and digital technologies, and their application to a wide range of industrial, civil and social sectors and problem areas. IDT 2017 was also an opportunity for teachers, researchers, practitioners, academics and engineers to meet, exchange ideas, and gain insights from each other. IDT 2017 offered a platform to address the technological, societal and other aspects of information systems of TEMPUS CERES project.



The main aim of the CERES workshop was to bring together young researchers, teachers from academy as well as industry working in all areas of information technologies. Organizers tried to create good atmosphere and conditions for current and interesting presentations, discussions and cooperation. Participants could also take attendance in other workshops of the conference. Namely, they could visit and discussed within workshops on (a) *Dynamical Systems and Real World*; (b) *New Frontier Information Digital Technology: From Logic Design To Real-World Applications*; (c) *Reliability Technologies* and (d) *Biomedical Technologies*.



More than 50 works of workshop's participants and experts were presented. Some of presentations of young researchers were discussed at 4 oral workshop sections and

11 conference sections. Some of them were included into the well-known IEEE Xplore and Scopus repositories. This guarantees increasing of potential of workshop's participants. In the plenary sessions, distinguished invited experts gave a review of the future perspectives in their research areas: reliability, medical informatics, information technologies and logic design. In particular, next invited lectures were given:

- Prof. Frank Coolen, (Durham University, UK). *The Survival Signature for System Reliability*;
- Prof. Radim Bris (Technical University of Ostrava, Czech Republic). *Stochastic Ageing and Maintenance Models for Unavailability Quantification of Complex Multi-Component Systems*;
- Prof. Max A. Viergever (University Medical Center Utrecht, Netherlands). *Challenges in Medical Image Analysis*;
- Prof. Claudio Moraga (Technical University of Dortmund, Germany). *Selected Aspects of Multiple-valued Bent Functions*;
- Prof. Charles El-Nouty (Universite Paris 13, France). *On the Mixed Integrated Fractional Brownian Motion*;
- Dr. Michal Varga (University of Žilina, Slovakia). *Application of Diverse Techniques and Paradigms in Pedestrian Movement and Behavior simulator*.

The organizing team prepared several cultural and social events that were held in pleasant atmosphere. Participants visited to two famous Slovak castles, which are located in Trenčín and Strečno. The Trenčín Castle, whose origins are dated to the end of 9th century, had seen below its walls hostile armies of Czech and Polish kings, Tatar hordes, imperial landsknechts, soldiers of the Turkish sultan, Tatars of the Khan of Krym, companies of the Duke of Sesia, and Kurucs and Labanec armies. However, it has never been conquered by a direct attack. The oldest stone construction of the castle is the pre-Romanesque rotunda, which dates back to Great Moravia period.



The Strečno Castle is a ruin of a medieval castle of an irregular plan located in northern Slovakia, 12 km east of Žilina. The castle stands on a 103-metre-high cliff above river Váh. The first recorded mention of the stone castle is from 1316.

Participants of the workshop really liked the scientific part and cultural events. The workshop's participants obtained the official certificates that confirmed quality of their works.



Based on their feedbacks, the organizers hope that similar workshops will also be organized in the frame of next IDT conferences. The organizers also expressed hope that the CERES workshop became a good start point for participants in their research career, and it allowed them to increase their research potential.



ATHEALTH Technical Workshop on CERES Portal Implementation

Technical Workshop on CERES Portal Implementation was held at University of Žilina on September 4-5, 2017. 15 representatives of TEMPUS projects ATHEALTH and CERES together with other participants from University of Žilina analyzed implementation, dissemination and outputs of the CERES project.

Dr. Patrik Hrkut described the CERES Portal and its administration. Some topics of technical overview of the CERES Portal and its operation were presented in the workshop. Practical classes were realized in the meeting too. The coordinator of ATHEALTH project (reg. no. 543889-TEMPUS-1-2013-1-SE-TEMPUS-JPHES), Prof. Mosad Zineldin (Linnaeus University, Sweden), proposed to use this portal to support cooperation of young researchers from Egypt, Lebanon and Morocco with organizations and industrial enterprises. Prof. Elena Zaitseva and Prof. Vitaly Levashenko organized discussion on the portal dissemination. The real steps of CERES implementation and support of young researchers from ATHEALTH project were proposed in this meeting. Participants supported idea of using the CERES Portal as a new possibility to young researchers from Mediterranean region. This will allow improving research conditions of young researchers and involving them into real research project of enterprises. Such activities should raise the level of higher education and support university-business cooperation in Mediterranean region.

Dissemination and sustainability will be useful for implementation of future projects. The strategy for the projects sustainability was also drawn in this meeting. New opportunities for future cooperation were considered and studied.



Teaching Visit of Representatives from University of Žilina to Brest State Technical University

A key objective of CERES project was to improve research conditions of young scientists in Belarus. One of the approaches to achieve this objective was extend existing partnerships between European and Belarussian universities. The visit of lecturers from University of Žilina should be considered as development of cooperation between research teams under the CERES project. This activity was planned in accordance with WP 3.2 *International and technical support of CERES*. Two teachers, Prof. Elena Zaitseva and Dr. Miroslav Kvassay, made a short visit to Brest State Technical University. This visit was held from September 18 till September 20, 2017.

The main goals of this visit were (a) presentation of current trends and achievements in European support of young researchers and (b) organization of potential cooperation between different research teams. Several lectures were delivered during this visit: *International Support of Young Researchers by CERES*, *Education System in Slovakia*, *Basics of Knowledge Discovery Process* and *Multi-state System in Reliability Analysis*. The lectures were oriented to young researchers, students, teachers and the university's administrative staff. Working languages of these lectures were Russian and English. The main focus of lectures was familiarization of young researchers with different variants of education in Slovakia and preparation of various project proposals. More than 100 students, young researchers and teachers from BSTU participated in these lectures. Fruitful discussions with young researchers of BSTU continued after these lectures. Students were interested in a possibility of application for mobility grants and they had a lot of questions about the education system in Slovak and other countries of European Union.

Participants hope that future cooperation of young researchers with Slovak research team will also obtain a new impulse. Results of this kind of cooperation would be preparation of common education and research projects as well as joint research papers and exchange of mutual ideas to deepen and strengthen links between universities and industrial partners in Slovakia and Belarus.



Technical Visit in order to Discuss Source Codes and Installation Process of the CERES Portal

The team of representatives of University of Žilina made two short visits to national CERES project vice-coordinators. The first visit was at Belarus State University of Informatics and Radioelectronics (Minsk) during September 18-20, 2017. The second visit was at National Transport University (Kiev) during October 13-15, 2017.

The main purposes of these visits were discussions with administrators of the CERES Portal in order to configure and install the CERES Portal on national servers. These visits were organized in accordance with WP 2.2.

The leader of programming team, Dr. Patrik Hrkut, presented technical aspects of web-based platform and its administration. This web-based platform is a principal part of the CERES Portal. Some topics of technical overview of the platform were discussed between technical personal of partner universities and representatives of the programming team. Prof. Elena Zaitseva discussed future perspectives of CERES Journal. The result of these meetings was improvement of sustainability of the CERES Portal.

Small coordination meetings with senior administration staff of BSUIR and NTU were also organized. Discussions about financial management with BSUIR and NTU project teams allowed detecting critical positions from financial payments.

Analyses of CERES potentials and future development of the CERES project were completed. Discussions about future project development with different representatives of national vice-coordinators took also part during these meetings.



Ukrainian National Expert Meeting on CERES at National Transport University

National meeting was held at National Transport University from October 16 to 18, 2017. Representatives from different countries and universities were gathered at the roundtable. The meeting was attended by participants from Slovakia (University of Žilina), Germany (University of Paderborn),



and Ukraine (National Metallurgical Academy of Ukraine, Zaporizhzhya National Technical University, National Transport University, Radiy: Research and Production Corp.). They were welcomed by the rector of National Transport University, Prof. Mikolay Dmytrychenko, and the vice-rector for scientific work, Prof. Mikolay Dmytriev. In their welcome speech, the rector and vice-rector underlined importance of projects as CERES for universities in Ukraine and thanked to all participants for preparing the project and for their active involvement in solving a lot of questions that arose during the project.

At the meeting, participants reported on the work that was carried out during the reporting period, presented reports and discussed the operation and using of the CERES Portal for target groups of young scientists, university lecturers and industrial enterprises. Several opinions on the further development and operation of the CERES Journal and site for young scientists were also discussed. All project partners commended the work and underlined the need for further cooperation. External experts were actively involved in the meeting. They were made familiar with the performed work and reports about the achieved results, and they provided an independent assessment of the work of the Ukrainian team in the frame of the CERES project. They expressed satisfaction with the outputs of the project and they underlined that the cooperation that began by this project between educational and industrial institutions from Ukraine, Belarus, Slovakia, Czech Republic and Germany should be further developed and deepened after the end of the project. This agreed with opinion of other participants of the meeting.

The second day of the meeting began with an excursion to the industrial partner of NTU, which is Brovary Road Construction Department No. 50. The guests were acquainted with the process of repairing the real object of the north-eastern bypass of the city of Kiev road P-03. Participants were able to see the birth of a new high-quality

road from the preparatory works (marking with the help of a spacecraft) to the direct work of construction machinery. Modern road vehicles made arrangement of layers of the basis of the road construction and sealing them in accordance with all the rules and norms. The



participants of the meeting from Brovary Road Construction Department No. 50 stressed the importance of involving young people in scientific development, which would be an impetus for the introduction of innovative technologies at every stage of production process of their company. Other participants completely agreed with these words.

The reports and the results of fruitful cooperation of 16 participants of the CERES project, 8 external experts and 6 participants of the TEMPUS projects FKTBUM and EcoBRU were presented in this meeting. They liked the CERES projects and appreciated the work that was done during the project. Participants from other TEMPUS projects saw a big potential in the CERES Portal that was developed during the project and had several interesting comments. They also expressed possible interest to publish results of works of young scientists from their teams in CERES Journal.



Belarusian National Expert Meetings on CERES at Brest State Technical University and Belarus State University of Informatics and Radioelectronics

On October 30 – November 01, 2017 national expert meetings of the CERES project were held at Belarus State University of Informatics and Radioelectronics and Brest State Technical University.

More than 20 representatives of project partners from Slovakia, Germany and Belarus and also the invited experts from Belarusian enterprises (as Savushkin Product, Tectus Media, ApCelp, and EPAM Systems) discussed the CERES project implementation and the main results achieved during the project.

Self-evaluation, quality control and administrative issues of the CERES project were evaluated in the meeting by Dr. Guido Kaufmann, the quality control officer from University of Paderborn.

Representatives of several industrial enterprises underlined the importance of training of students and young scientists to address current scientific and practical business problems.

The visit to Savushkin Product enterprise was also organized during the meeting. During the visit, the participants were familiarized with the production of the company and its business processes. They could look inside the production process and identified a potential for young people. Based on their observations and experiences, practical aspects of involving young researchers (students, master students) into solving enterprise tasks on university-enterprise research cooperation were presented and discussed at the round table hosted by Savushkin Product.



Publication of TEMPUS CERES Materials for Young Researchers

Several training manuals were published under the CERES project to help students and young researchers in preparing scientific publications, designing and presenting materials for scientific conferences and contests, and in order to instill a culture of designing scientific works.

The first of them is *Handbook on the Writing, Formatting, Review, Analysis and Publication of Scientific Works* prepared by Prof. Sergey Subbotin and Dr. Andrii Oliinyk. It was published at ZNTU (ISBN 978-617-529-131-3). The principal parts of this handbook were presented and studied in the frame of the CERES Summer School *Modern Trends in Young Education* which was held at ZNTU in September 2016. The handbook contains a systematic presentation of materials on writing, design and presentation of research works for publication in scientific journals. Issues of author's and editorial ethics are considered. The principles of reviewing and analyzing scientific publications are given. The book is intended for students, post-graduate students, young researchers and scientific and pedagogical staff of higher educational institutions and research institutes.



Another publication is *Research Advance based on Big Data Processing and Analysis*. It was prepared by Prof. Sergey Subbotin, Dr. Andrii Oliinyk and Dr. Serhii Leoshchenko. This book was published as a part of the Tempus CERES project in Slovakia (ISBN 978-80-554-1386-0). The book presents authors' original work in the field of processing and analyzing large data for decision-making. A set of mathematical indicators that allow quantifying key properties of scientific publications and analyzing their quality

and interrelation is proposed in the book. The publication is aimed to young researchers.

Other resources useful for young researchers were prepared as proceedings of different international events that were organized in frame of the CERES project. Particularly, *Engineering Education: Challenges & Developments* (2014, 2016), *Road Safety* (2014-2016), *Youth in Science* (2015), *Information and Digital Technologies* (2014, 2015 and 2017).

Most CERES materials were published electronically. This allowed saving part of financial resources of the CERES project, which were allocated for printing. All these CERES materials are publicly available for all people that are interested in them.



The X Republic Conference of Young Scientists and Students on Modern Problems of Mathematics and Computer Engineering

Like two years ago with the support of the CERES project, *Scientific Conference of Young Scientists and Students on Modern Problems of Mathematics and Computer Technology* was held at BSTU on November 23–24, 2017. The most important information about the conference was presented in CERES BSTU website.

During the conference, a lot of interesting results of young researchers were presented. The proceedings of the conference contain materials on modern problems of intelligent data processing technologies in scientific and applied research, robotics, modeling of nonlinear dynamic processes, analytical and numerical methods of research in mathematics and their applications. The authors of the best articles were invited to publish their research materials in CERES Journal, which belongs to the main visible outputs of TEMPUS CERES project and which aims at publishing works of young scientists.

CERES experts Dr. Sergey Parfamuk and Dr. Pavel Kachurka were members of the program committee of the conference. They delivered several presentations about the CERES project and its outputs, such as CERES Journal and the CERES Portal.



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