

Dear colleagues,

GEOBIZ newsletter #18 is in front of you summarizing project activities in last project quarter (12) and results – publications which have been prepared by the project partners and published by the project. This is also last number of GEOBIZ newsletter in the project lifetime, and from now on we plan to release yearly one number of newsletter in subsequent five years.

We still have to deliver Final report what requires collective engagement of all partners so that we show and document success of GEOBIZ project.

Past three years pass fast, and regardless to extraordinary obstacles (Covid-19 pandemic) were filled with plenty of project activities, about which we regularly reported.

Beside presenting three publications published by the project in the newsletter there are articles about 11th Progress meeting held in Chisinau on October and Final conference + 12th Progress meeting held in Tirana between November 9-11th 2022. Also, we bring contribution about project partners participation in activities celebrating 35th Erasmus Day in several project countries.

Also, I use the opportunity to invite you to participate in the second release of the survey entitled 'Academia-Business cooperation requirements towards establishment of efficient Spatial Data Infrastructures (SDI)'.

Vesna Poslončec-Petrić

Survey: Academia-Business cooperation requirements towards establishment of efficient SDI

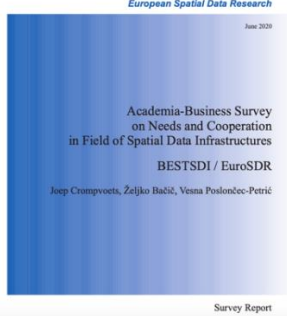


Vesna Poslončec-Petrić
University of Zagreb,
Faculty of Geodesy

The research 'Academia-Business cooperation requirements towards establishment of efficient Spatial Data Infrastructures (SDI)' is ongoing. This survey is joint effort of the Erasmus+ project 'Business driven problem-based learning for academic excellence in geoinformatics-GEOBIZ' and 'EuroSDR - the European Spatial Data Research Association' and is conducted on pan-European level

The aim of this specific survey is to collect information on the:

- needs and expectations of academia and business stakeholders regarding the quality of present higher education in SDI,
- expectation of business sector on knowledge and skills provided by academic institutions supporting labour market,
- forms of cooperation between academic and business sector in educational and research process,
- expectations of academic and business sector in further development of SDI and monitor the changes of needs and cooperation in the field of SDI.



A first release of the survey took place in 2019 and was published in EuroSDR publication '[Academia-Business Survey on Needs and Cooperation in Field of Spatial Data Infrastructures](#)'. The results of the survey will be also presented as a formal EuroSDR publication and presented in relevant workshops and conferences.

I am using this opportunity to invite you once again to (if you haven't already) to participate in the second release of the survey entitled

'Academia-Business cooperation requirements towards establishment of efficient Spatial Data Infrastructures (SDI)'.

The questionnaire is available in the following languages:

- [Albanian](#),
- [Bosnian](#),
- [English](#),
- [Romanian](#),
- [Serbian](#) and
- [Croatian](#).

Therefore, we are kindly asking you to take 15 minutes of your valuable time and participate in this survey. The questionnaire consists of 20 questions grouped in 6 parts. The deadline for completing the questionnaire is set for 20 January 2023.



In advance, we would like to thank you for completing this questionnaire. This would be enormously appreciated.

GEOBIZ Project Outcome Brochure



Željko Bačić
University of Zagreb,
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Education in the world today is faced with numerous challenges, some of which are generated by the 5th technological revolution, which is rapidly changing the industrial and social face of the modern world. Rapid changes present a special challenge to the education

system, and especially higher education, which provides the necessary knowledge and skills for future experts on whom the prosperity of the human community depends. In this context, the education in STEM field is under special pressure to keep up with rapid technological changes and provide students with adequate knowledge and skills. Keeping in mind that education of new specialists takes three to six years, curricula modernization processes also require time, and securing financial resources for access to cutting-edge technologies is a constant challenge, coping with technology modernization is an impossible mission for many universities. The

above-mentioned situation brings higher education, especially in countries with weaker economic power, to a position of constant delay in the modernization of study programs, especially in the practical part of teaching, that is, the acquisition of skills.

Recognizing the limitations and challenges faced by universities in the regions of the Western Balkans and the Eastern Partnership, an idea was formed to ensure the modernization of study programs in step with the progress of technology and deliver experts to the business and society who will be better prepared for work in the real sector and contribute to society development. The idea transformed into a model is based on the strengthening of cooperation between the business and academic sectors, the active involvement of business entities in the teaching process, adaptation of teaching content, especially in the practical part, with cases from business practice and the solving them implementing problem-based learning. On these bases, a consortium of partner universities and companies from Albania, Bosnia and Herzegovina, Kosovo, Moldova and Montenegro and program universities and companies from Belgium, Germany, Croatia and Serbia was formed, which applied to the Erasmus+ Capacity Building in Higher Education call in 2019 with the proposal of the GEOBIZ project, which has been accepted for implementation.

The establishment of an active model of business-academic cooperation in higher education, based on examples from the economy translated into the practical part of technologically advanced subjects for the solution of which the model of problem-based learning will be applied, represents a major task. With the outbreak of the Covid-19 pandemic at the very beginning of the project realization, this task became even more complex. Nevertheless, GEOBIZ consortia managed even in those demanding circumstances to perform and fulfil

set targets. The structure of consortia, involving, beside universities also three geoinformatics companies visibly contributed, together with intensive trainings and project meetings, to better problem understanding and cooperation model development. Recognizing importance of business-academic cooperation for modern higher education in technology driven GEOBIZ consortia has conducted additional activities towards strengthening and expanding this cooperation resulting with 24 business cases transferred into practical parts of new or modernized courses which have been introduced in 28 courses at partner universities, cooperation established between 47 companies and 9 partner universities.



In order to present the project results, above all the development and implementation of the business-academic model and modernization of study content based on the established cooperation, in this publication we tried to present the project activities and their outcomes. Partly through a brief review of certain key activities, and partly through examples of how the model of business-academic cooperation was implemented. Contributions in this publication present the effects of the implemented cooperation on the modernization of the partners curriculum, how new contents were implemented in the partner universities study programs, and how the

cooperation between companies and universities was executed.

We believe that our experiences can also serve other academic institutions in modernizing their study programs and strengthening cooperation

with stakeholders, whether economic or public entities. Therefore, individual reports, business cases elaborated into practical exercises, i.e. course contents are available to everyone in the established repository via the project's website <https://geobiz.eu>.

GEOBIZ Guide: How to implement PBL into learning process



*Željko Bačić and Vesna Poslončec-Petrić
University of Zagreb, Faculty of Geodesy*

The need for new professionals who complete their studies to be able to independently solve tasks and problems in today's academic education system is becoming more and more pronounced. At the same time, higher education institutions struggle with the impossibility of equipping them with modern equipment, especially in the STEM field, which is particularly exposed to rapid technological changes brought about by the digital revolution. The very ability to solve tasks and problems is not innate by itself, but needs to be developed, which is not easy or particularly successful when applying classical forms and methods of teaching. Therefore, the methodology of problem-based learning was developed, which is imposed as an alternative to classical forms of teaching. Problem-based learning can be applied at the level of subjects, modules or the entire study program, but regardless of the scope, in all cases it is necessary to adhere to the teaching methodology and the rules that have been developed.

The Erasmus+ capacity-building project in higher education "Business driven problem-based

learning for academic excellence in geoinformatics" - GEOBIZ realized from 2019-2022 aimed to improve the practical parts of teaching courses in the field of geoinformatics, the contents of which are particularly exposed to rapid technological changes.



The solution was found in the strengthening of cooperation between the business and academic sectors and the inclusion of companies in the teaching process. Both, using of practical cases from the practice of companies prepared for the implementation of the practical part of the lesson, and through the introduction of problem-based learning in the approach to that practical as well as theoretical teaching. University of Belgrade, Faculty of Civil Engineering under the leadership of prof. Branko Božić, PhD. was responsible for the introduction of problem-based teaching in new and modernized courses created by the GEOBIZ project. In addition to 25 new or modernized courses and established cooperation between partner universities and

business companies, the result of the project is this practical guide on the implementation of problem-based learning in the teaching process.

In a simple way, supported by examples, prof. Branko Božić, PhD. presents in this guide the methodology of problem-based learning and how it is implemented in the teaching process. This concise summary guide is focused primarily on the field of geoinformatics, but the presented methodology and instructions can be implemented in any STEM field, and beyond.

Therefore, this guide represents a concrete and valuable contribution to the learning process in higher education, and as one of the results of the project, we are pleased to present it to the public with thanks to Professor Branko Božić for his commitment and effort.

[GEOBIZ Practical guide „How to implement PBL into learning processes“](#) available for download from the project's website. The direct link is [here](#).

AN OVERVIEW OF THE DEVELOPMENT OF CLASSICAL AND MODERN GEODETIC REFERENCE SYSTEMS OF ALBANIA (1872 ÷ 2019)



*Željko Bačić and Vesna Poslončec-Petrić
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Many areas of science and respectively professions are today exposed to fast technology development. The result of this development are new technologies, methods, approaches, and results. Certain professions, especially from the STEM area are more exposed to the changes which Digital revolution is bringing. Among them geo-related sciences and professions are strongly affected, and we are witnessing revolutionary changes in many fields of application, among which determination and surveying of fundamental geodetic networks is clear example. Satellite technologies for positioning and navigation, determination of Earth's gravity, magnetic fields, and sea level enabled in past two decades tremendous breakthrough in determination of definition and

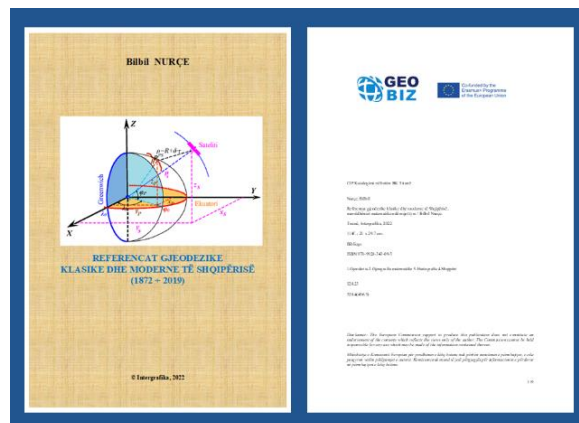
determination of those networks. However, in this specific field, all new developments rely on previous works and therefore knowledge about the establishment and development of fundamental geodetic systems and networks in any country is necessary precondition for and new activities.

This monography, written by Dr. Bilbil Nurçe, represents a systematic and comprehensive overview of erection and development of fundamental geodetic networks in Albania from the very beginning in 1872 till presence. It is of great importance for the Albanian surveying and other geo professionals because it provides essential information for understanding how those networks have been established, what are their specificities, strengths, and weaknesses. The value of this monography is not only that knowledge about the fundamental networks will be kept for future generations, but also about the fact that any future development of existing or new networks, which always rely on previous ones, will have reliable information about the existing networks and be able to choose best solution for an upgrade or new development.

Monography is also valuable contribution for the study programs of geodesy and geoinformatics as well as related fields which are exposed to fast technology changes and struggle to deliver technology related courses, both theoretical and practical parts, on the level which business and public sector expect. Considering technologies implemented for resurvey of fundamental geodetic networks in past two decades we witness tremendous technology advance, new methods, approaches, and solutions, which should also be implemented in teaching process.

This is the reason why Erasmus+ Capacity Building in Higher Education (CBHE) project „Business driven problem-based learning for academic excellence in geoinformatics“, executed from 2019 till end of 2022, published this monography. The GEOBIZ objective was to modernize curriculum of geoinformatics courses which are under influence of fast technology changes due to the digital revolution. Especially we have focused on practical part of those courses and recognizing importance of business-academic cooperation for modern higher education in technology driven courses. Aiming to deliver to students comprehensive modernized content of those courses, partner universities introduced changes also in

theoretical part of modernized courses, among which were those covering technologies and methods implemented today for surveying and maintenance of fundamental geodetic systems and networks.



In mentioned context, Dr. Nurçe monography “Development of classical and modern geodetic reference systems/frames of Albania (1872-2019)” represents valuable contribution to GEOBIZ project objectives and publishing it is one of the final project results. Therefore, it represents great pleasure for GEOBIZ project consortia that we can publish this monography which will benefit students, teachers, and professionals in Albania.

Celebrating 35th Erasmus Day, 12-16 October



Vesna Poslončec-Petrić
University of Zagreb
Faculty of Geodesy

The 35 years of Erasmus+ program have been celebrated around the Europe and globally in the week from October 12th till 16th. On this occasion numerous events have been organized and GEOBIZ partners participated and contributed in

several of them. Here is the short overview of GEOBIZ partners involvement.

University of Zagreb prepared for Erasmus Day celebration program in Croatia 5 video clips describing GEOBIZ project activities which have been presented on Saturday 15th on Erasmus Day conference.



All 5 videos are available [here](#).

Also, presentations and benefits of the Erasmus+ program were held by our other partners. The University of Tirana published the video of the Erasmus+ program which prepared by three geography students, the first to use a scholarship from this program. All three were at Kodolany University of Janos / Hungary. For more

information, we invite you to watch the video clip.



35 YEARS OF ERASMUS+ ALUMNI MEET-UP IN MOLDOVA



*Lucia Capatina
Faculty of Geography, Tiraspol
State University / State
Pedagogical University "Ion
Creanga"*

On October 12, 2022, the National Erasmus+ Office in Moldova organized 35 Years of Erasmus+ Alumni Meet-up; the event was dedicated to the celebration of 35 years of the Erasmus+ Programme of the European Union and it was an open event for all interested.



GEOBIZ at the Exhibition of Erasmus+ projects

The meet-up was hosted by the UPS "Ion Creanga". The visitors have had the opportunity to attend the exhibition of Erasmus+ projects and mobility offers. GEOBIZ project participated at the exhibition, presented the results achieved and shared materials done during the lifetime project (banner, eco bags, leaflets, flags etc.).



GEOBIZ project team at 35 Years of Erasmus+ Alumni Meet-up, Chisinau, October 12, 2022



GEOBIZ project representatives of UPS “Ion Creanga”, TUM, KU Leuven and UNIZG participated at the event. The Alumni meet-up was divided in three panel sessions:

- (1) around Europe with Erasmus+ - the session about the stories of students which have benefited from the Erasmus+ ICM,
- (2) Youth experiences that have changed lives, session focused on tales of youngsters from Moldova about their Erasmus+ training activities abroad and
- (3) Erasmus+ projects – the spring board for modernization of national universities, session where academic staff shared their

experience during participation in Capacity Building, ICM and JM projects.



Lucia Capatina, panel session „Erasmus+ Projects – the spring board for modernization of national universities”

In the 3rd session, Lucia Capatina, one out of three session speakers, as part of the GEOBIZ team, shared her experience about participating in the GEOBIZ project and other ICM, Youth mobility projects funded by Erasmus+. After the panel sessions, the participants were invited to the Concert “35 Years of Erasmus+” at Organ Hall, all performances were presented by Erasmus+ Alumni (from AMTAP).



GEOBIZ team at Organ Hall, Chisinau, performance by Erasmus+ Alumni

11th Progress meeting, Chisinau 13-14 October



*Livia NISTOR-
LOPATENCO,
Technical University of
Moldova*



*Vitalie DILAN,
Tiraspol State University /
State Pedagogical
University "Ion Creanga*

The 11th GEOBIZ Progress meeting was held in Chisinau during 2 days – 13 and 14 of October, 2022. The meeting was organized in hybrid format; for on-line participants the virtual room on Microsoft Teams was created and shared. In the first day, all partners who were present in a physical format attended the meeting at State Pedagogical University “Ion Creanga”/UPSC, Faculty of Geography; the 2nd day – at Technical University of Moldova/TUM, Faculty of Constructions, Geodesy and Cadastre.



Prof. dr. sc. Željko Bačić, Welcome speech to the participants at the 11th Progress meeting

At the beginning, a welcome speech was addressed by the representative of the host – institution, UPSC, Vice Rector on Scientific Activity and International Relations, Ludmila Armasu, PhD, assoc. prof. Despite the transitions and reforms in the higher education system in the Republic of Moldova, Vicerector Ludmila Armasu appreciated the GEOBIZ Project impact

at the level of the university, esp. at the Faculty of Geography level such as the improvement of the quality of the Master Programme in Geoinformatics through introducing new courses, updated other courses including the Curricula modernization, PBL approach in all developed curricula, hard and software acquisition for the GIS lab used for lectures by master students, strengthening the cooperation between business and academia etc. Pojar Daniela, Vice Rector on Financial Problems and International Relations, TUM, highlighted the importance of the PBL approach in the modern education process, the approach that TUM started to implement several years ago, and GEOBIZ offered a support to the Faculty of Constructions, Geodesy and Cadastre colleagues to improve their skills and knowledge, including the equipment and software procurement that increased the quality of studies based on practical skills.



*GEOBIZ Progress meeting participants,
UPSC, Chisinau*

Prof. Željko Bačić, PhD. welcomed all the participants, on-line and in person, and highlighted the importance of the activities set up for 2 days as it is the last progress meeting before the Final Conference and one month before the end of the GEOBIZ project. The 2 days that will be focused on results achieved and on perspectives for the future collaboration – new project proposals, cooperation etc.

The main discussions were focused on results, quality assurance and improvements in higher education based on experience exchange between countries/partners that were involved in GEOBIZ Project. The first day was about the curriculum implementation at nine partner countries, quality assesment & evaluation and dissemination & exploitation.



*GEOBIZ Progress meeting participants,
TUM, Chisinau*

One of the goals of the GEOBIZ project was about the courses' modernization (at bachelor and/or master level) through PBL approach and study cases (24 in total) that were developed in the first part of the project, the same approach being used for the LLL courses implemented by the partner countries/universities. Evaluation of the held GEOBIZ courses, results and students' opinion were presented during the meeting, and all these tasks are part of the WP 3. Discussions about the quality assesment, resultes achieved, improvements to be done are part of the WP4 session, Quality assesment & evaluation. Report for Y2+ on external quality assessment and evaluation was presented and being highlighted the most important facts achieved by GEOBIZ partners and the parts needed to be improved. The WP5 results, as it is about the dissemination and exploitation, were presented at each progress meeting; these tasks are very important and the reports presented by task leaders were highly appreciated and also, the partners were asked for support and still active involvment in this regard. Project results publication, the website attractiveness and social media

maintenance through sharing interesting and usefull news are some tools that were discussed about.



Prof. Željko Bačić, GEOBIZ coordinator, with GEOBIZ local team – PhD, assoc. prof. Livia Nistor – Lopatenko, TUM and MSc, assist. prof. Vitalie Dilan, UST/UPSC

In the second day, the focus was on Business – Academia cooperation, as part of the dissemination and exploitation plan. The report and indicators achieved, as well as efforts of each partner university were appreciated. The two rounds of the BA improved the cooperation with business partners, increased the number of the agreements signed and the business involvment in the teaching process etc. – were only some of the ideas shared by the partners during the discussions on the subject. The WP6, with the special focus on the Project sustainability raised many ideas among the on-line and in person participants. The vision of the GEOBIZ project was shared as a draft report, after that, the discussions and new ideas were proposed. As well as the ideas of new project proposals for the next Erasmus+ Call were discussed.

At the end of the meeting, participants were asked to manage their activities in the manner that at the Final Conference in Tirana most of them to do their best to be present in person; each partner to come up with some concrete ideas about their interest for the next project proposal in Erasmus+ Call in order to have an efficient and interesting round table on this subject.

Final Conference and 12th Progress meeting, Tirana 9-12 November 2022.



*Željko Bačić and Vesna Poslončec-Petrić
University of Zagreb
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The GEOBIZ project ended on November 14th and just before this date Project consortia has organized project Final conference and last 12th project Progress meeting which took place on November 10th (Final conference) and 11th (Progress meeting) at the Rectorate of the Polytechnic University Tirana. In front of all project partners and representatives of Polytechnic University of Tirana and University of Tirana as well as representatives of the business and public sector from Albania Final conference served to summarize project and present GEOBIZ project results. Organized in stream of short presentations the conference gave insight in project activities and achievements, especially the process of creation, preparation and implementation of project developed curricula which focused on practical part (exercises) of technology driven courses in geoinformatics. This process included detection of business cases which have been transformed into the upgradable exercises in a form of problem-based teaching and incorporated in to new or modernized courses of project partners study programmes.



Second phase was focused on establishment of cooperation between businesses and academic institutions, which has been formalized through agreements or memorandums of cooperation, and inclusion of those businesses into the teaching process. This was achieved in several ways. By using companies' equipment, conducting part of the exercises at the company's premises, inclusion of company's experts in teaching process and conducting practical exercise at the companies. Developed model has proved itself in practice and results have been demonstrated at the Final conference.



In a second part of Final conference, we focused on broader project objectives and impact on geoinformatics profession and society in general. In this context survey *'Academia-Business cooperation requirements towards establishment of efficient Spatial Data*

Infrastructures (SDI)' has been announced and will be released after Final conference and two ideas for new CBHE project initiatives have been presented.

Final conference has been followed by 18th Project Management Board meeting and 12th Progress meeting, both focusing on remaining project activities, especially finishing project

deliverables (reports), financial management and preparations for Final reporting.

Summarizing events in Tirana, it is to express our gratitude to the organizers, colleagues from Polytechnic University of Tirana and University of Tirana, which also took care, beside organization of events, to prepare excellent social events to the great satisfaction of all participants.



Participants of the GEOBIZ Final conference

Impressum

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