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The Project:

## **Modernizing geodesy education in Western Balkan with focus on competences and learning outcomes - GEOWEB**

**Activity 2.2 - Educational cooperation agreement**

**Activity 2.3 - Western Balkan Geodetic Forum**

Under the Erasmus+ project - Modernizing geodesy education in Western Balkan with focus on competences and learning outcomes - GEOWEB, in the Work package two, regarding the mutual cooperation between stakeholders and educational institutions two separate working activities were planned. The first activity has the task to define and prepare framework for academic educational institutional cooperation and the second is related to find an organizational form for stakeholders continuous systematical cooperation in all geodetic areas named Western Balkan Geodesy Forum - WBGF.

### **Activity 2.2 - Educational cooperation agreement**

Recognizing the mutual benefits of cooperation and integration among Western Balkan geodesy educational institutions the GEOWEB partners agreed to sign the cooperation agreement in the following areas:

- *Exchange of faculty members*
- *Exchange of students*
- *Joint research activities*
- *Joint organization of seminars, conferences and scientific symposia*
- *Submission of joint project proposals on education and research to be funded by European Union or other national or international funding resources*
- *Special short term academic programs*
- *Professional Development Programs*
- *Other areas in which concrete mutual interest in cooperation is established or will be developed*

To ensure successful implementation of the activities proposed each partner is obligated to appoint a coordinator who will be active in communication and cooperative. The participant agreed to implement this agreement depending of the availability of funds and in accordance to the institutions normal practice, policies and specific terms and conditions of the funding agencies.

During the Project period several good examples of activities were happened. For example, at the International scientific conference – Professional Practice and Education in Geodesy and Geoinformatics

(ISBN 978-86-7518-189-7) organized by Serbian Union of Surveyors, University of Belgrade – Faculty of Civil Engineering and University College of Professional studies for Civil Engineering and Geodesy that occurred in Serbia, Jun 2016, all GEOWEB Partner’s countries participated as the members of Scientific committee (Huaan Fan, Flor Alvarez Taboada, Edmond Hoxha, Medzida Mulic, Admir Mulahusic, Branko Bozic). Except the participation in Scientific committee, three interested articles prepared by GEOWEB Project’s staff were published and presented by the group of authors (Branko Bozic, Huan Faan, Zeljko Cvijetinovic, Oleg Odalovic, Admir Mulahusic, Medzida Mulic, Nedim Tuno, Jusuf Topoljak, Edmond Hoxha).

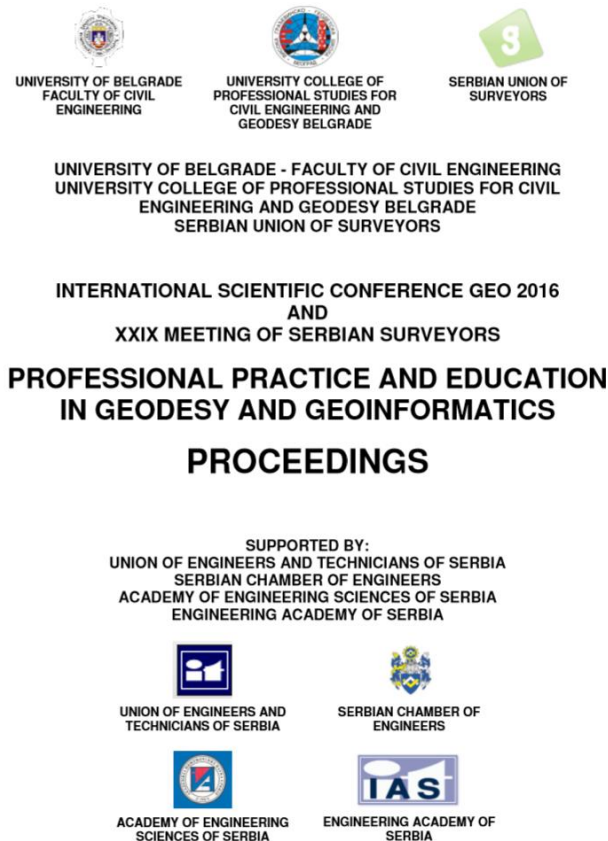


Fig. 1: The Conference Proceedings

Another characteristic example of cooperation between the two partner institutions is the participation in the committee formed at the University of Sarajevo in the election of the teaching assistant professor Medžid Mulić into associate professor. As a member of the Commission for the election, University of Belgrade profesor Branko Bozic was appointed. The process was finished successfully.

## COOPERATION AGREEMENT

Among the Balkan partner universities of the Erasmus+ GEOWEB project:

Polytechnic University of Tirana, Albania  
University of Tirana, Albania  
University of Sarajevo, Bosnia and Herzegovina  
University of Mostar, Bosnia and Herzegovina  
University of Tuzla, Bosnia and Herzegovina  
University of Belgrade, Serbia  
University of Novi Sad, Serbia

### Preamble

Since October 2015, seven Western Balkan universities listed above are cooperating to modernise geodesy education and research within the framework of the GEOWEB project, funded by the Erasmus+ Programme of the European Union.

Recognising the mutual benefits of deepened and formalized cooperation and integration among Western Balkan universities, the seven geodesy institutions in the above-mentioned universities (hereinafter referred to as the "party" or "parties") have agreed to sign this cooperation agreement.

### Article 1

The parties determine and regulate with this agreement the areas and matters of mutual cooperation as well as the forms and manners of its implementation.

### Article 2

Cooperation will be undertaken, subject to availability of funds and the approval by the respective university administration, in the following areas:

1. Exchange of staff members
2. Exchange of students
3. Joint research activities
4. Joint organization of seminars, conferences and scientific symposia
5. Submission of joint project proposals on education and research to be funded by European Union or other national or international funding sources
6. Special short-term academic programs
7. Professional Development Programs
8. Other areas in which concrete mutual interest in cooperation is established or will be developed.

### Article 3

To ensure successful implementation of cooperation activities, each party shall appoint a coordinator to initiate and coordinate specific activities.

### Article 4

The implementation of this agreement is dependent upon the availability of funds for joint activities. All commitments, obligations and expenditures related to projects approved under this agreement shall be administered in accordance with each institution's normal practices and policies and the specific terms and conditions of the funding agencies.

### Article 5

Possible amendments and additions to this agreement shall be considered in writing and annexed to this agreement.

### Article 6

The parties agree that if a party of this agreement is unable to perform its obligations by reason of strike or other labor disputes, civil disorders, severe weather, or other unavoidable cause beyond the control of the party, such non-performance shall not be considered as a breach of this agreement.

### Article 7

This agreement shall remain in force for a five (5) year period from the date of the last signature, with the understanding that it may be extended by mutual agreement in writing for additional five (5) year period. This agreement may be terminated by either party giving six (6) months written notice to other parties.

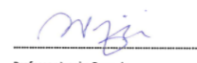
### Article 8

This agreement shall go into effect when signed by the representatives of all parties.

### Article 9

This agreement has been drawn in English language in seven (7) originals. Each party will receive one original.

For University of Belgrade



Professor Ivanka Popovic

Belgrade 26.10.2016

Place Date

For University of Belgrade,

Faculty of Civil Engineering



Professor Brank Bozic, Dean of the Faculty

Belgrade 19.10.2016

Place Date

For University of Novi Sad,

Department of Computing and Control Engineering, Study Programme Geodesy and Geomatics



Professor Miro Govedarica, head of Study Programme Geodesy and Geomatics

Belgrade 19.10.2016

Place Date

Fig. 2: Cooperation agreement

Between UB and UNS the cooperation was continued dated back for several years. Two institutions permanently support each other in education activities, in participation of commission for the teacher's election, PhD commission, the student's mobility and etc.

In the future the greater participation of teachers in commissions for the election as well as in the preparation of doctoral theses of students is expected or joint research programs. In addition, it is necessary that at least once a year each Partner's should invite the teachers from other to hold a lecture at the beginning of the school year. During the project, all parties have already expressed their willingness to continue cooperation on the establishment of a joint regional program in the English language and further contacts of all interested parties are expected to come.

### Activity 2.3 - Western Balkan Geodetic Forum

WBGF was planned to be a non-governmental, professional organization or forum for geodesy education institutions and stakeholders that will support cooperation among geodesy institutions and Balkan national geodesy agencies, and also strengthen the link between educational institutions and labor market partners. The Project organized two annual conferences in order to present results and promote regional cooperation. WBGF is planned to continue even after the Erasmus project would finish.

The first annual WBGF was held in Belgrade, October 2016. The idea was that the existing geodetic Balkan associations should be spread with several neighboring countries. In this regard, we ask that the Serbian Surveyors Union, which currently chairs the Balkan association ask national associations from Croatia, Slovenia, Romania, Bosnia, Montenegro and Albania to declare desire to join already existed professional association. Seven representatives from three partner countries participated the first WBGF. Two representatives from Republic Srpska BiH entity were presented as a guest. The introductory Project coordinator opened the ceremony explaining the idea how significant the professional stakeholder's cooperation is and how important its contribution to study program development should be. Each country presented the main geodetic activities taken place in the area of their countries and pointed out what are the most important skills of the profession to be developed in order to satisfy the actual market needs of the graduates. At the conference UB presented the results of the survey have been taken to collect the information from private and public professional institutions related to market needs, their main activities, staff quality they have and their expectations toward many modern global technology involved so much in every day professional work.



Fig.3 : Opening session of the 1th WBGF meeting in Belgrade, October 2017



Fig. 4: WBGF members



Fig. 5. Discussion at the WBGF

During the conference, WBGF representatives met the teaching staff of the Department of Geodesy and Geoinformatics (DGG). Head of the DGG presented the department, its activities, most significant results and some plans for the future.



Fig. 6: PC Lab and study exercises content inside GIS study field at DGG



Fig. 7: Social event of WBGF and other Project participants

During the visit to the DGG WBGF and other project participants visited the computer classrooms where they were informed about the training process and how the exercises are organised in these classrooms. It was stressed that at DGG exercises from all the courses that are somehow connected to geoinformatics are exclusively held in computer classrooms applying principle one student – one computer.



Fig. 8: Laboratory for metrology



Fig. 9: Laboratory for surveying with new GNSS equipment purchased

The second WBGF conference was organized in Mostar, October 2017. The conference organized discussion in three sessions: 1) **GEOWEB** project and geodesy curricula, 2) Geodetic activities in Western Balkan and 3) Geodetic research and development.

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At the first session there were seven presentations:

- Progress report from the GEOWEB
- Comments and recommendations of the International Advisory Board (IAB) on geodesy curricula
- Geodesy education at University of Mostar (UNMO)
- Modernization of geodesy curricula at University of Sarajevo
- New master programme in GIS and mining modelling at Polytechnic University of Tirana,
- New master programme in Applied geoinformatics, at University of Tirana
- On-line & active learning at University of Leon: experiences with a happy ending.

At the second session there were four presentations:

- Updating the basic topographic map of 1: 5000 scale in urban areas of the Sarajevo Canton
- Short review of ongoing projects in geodesy profession - Federation of Bosnia and Herzegovina
- Geodesist role: Data Steward
- Geodetic activities at Immoveable Property Registration Office (IPRO) in Albania.

At the session three there were three presentations:

- Coordinates estimate under disturbed ionosphere conditions
- Innovative approach for solving specific geodetic problems in road construction
- Institutional Framework for Engineering Geodesy operation in the Republic of Serbia – Problems, Challenges and Perspectives.



Fig. 10: The WBGF and other Project participants in Mostar, October 2017



Fig. 11: The WBGf meeting, Mostar, October 2017

Another kind of cooperation was realized between the Department of Geodesy and Geoinformation at the University of Sarajevo (UNSA) and the Department of Geography at the University of Tuzla (UNTZ). They organized in Jun 2018, a three days' workshop for students of the UNSA Bachelor and Master Program named "When two Erasmus + projects meet in Sarajevo". They used the opportunity of visiting professors Mustafa Umit Gumushay from Yildiz Technical University Istanbul-YTU (within AK1 Erasmus + Credit Mobility Program) and assistant professor Edina Hadžimustafić from UNTZ for a three-day workshop on various GIS applications. The students expressed satisfaction with this workshop in the survey and suggested a new workshop with other GIS applications. Next workshop is scheduled for the second week of October 2018.

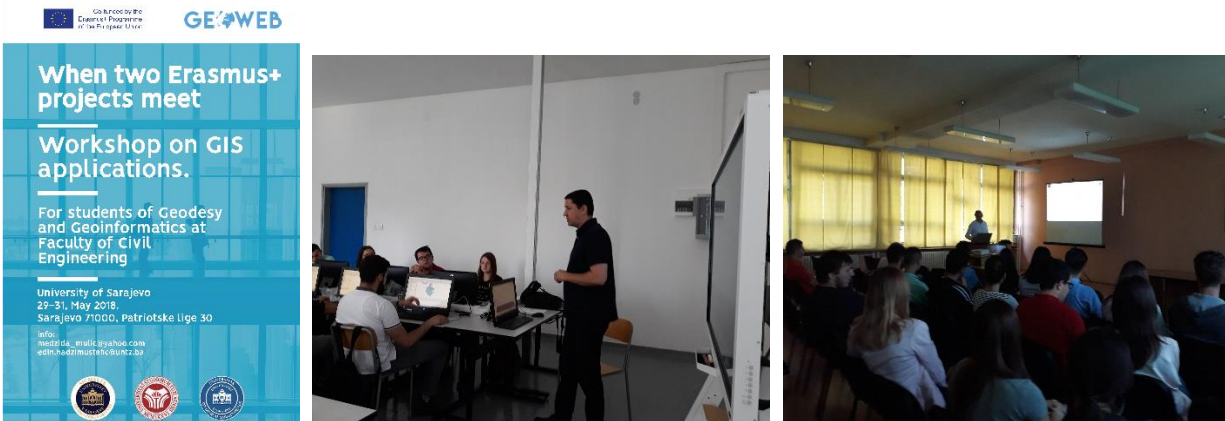


Fig. 12: The workshop on GIS application: poster and presentations by teachers from UNTZ and YTU

One more kind of the successful cooperation established between two Bosnian GEOWEB partner universities: University of Sarajevo-Department of Geodesy and Geoinformation and University of Mostar-Džemal Bijedić. Two teachers from UNSA give lectures for students of UNMO on the regular basis and this trend will continue in the future.

With the initiative of Albanian Society for Mine Surveying and Geomatics together with several other state and private institutions including GEOWEB Erasmus+ project, the First Western Balkan Conference on GIS, Mine Surveying, Geodesy and Geomatics is going to be organized from 3-4 October, 2018. This conference

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invited the professionals to apply the articles in various fields of Mine Surveying and geomatics. In Scientific committee several people from GEOWEB project were included as well as in Award Commission, too. Except the Albanian colleagues, four UB authors submitted the paper and will present the results of using UAV in inspecting the land damages in some landslide area in Serbia.



Fig. 13: The 1th Western Balkan Conference

For the future, more collaborative work should be and all professional societies, geodetic or mining need to facilitate permanent year's meeting. Today, local geomatics' markets are limited. Spatial data collection is not only the job of the field surveyor. Remote sensing technology, GIS, GNSS as the global one very effective and efficient, extended the role of surveyor and make him the manager of spatial data. Local or even national borders will be quite narrow and surveyor now could do the job independently of the physical presence. We have the sensors collecting a huge amount of data instead of several distances or angles and the big problem is how to store, process and visualize them for the consumers. Referring to this matter the further cooperation between all countries is obviously welcomed.

21.06.2018

Local coordinator

Branko Bozic, PhD