



## FROM THE BESTSDI NEWSLETTER TEAM



Dear colleagues

We present the  
**FINAL ISSUE**  
of the magazine  
"BESTSDI Newsletter".

The main events covered by this issue are the  
**12<sup>th</sup> BESTSDI WORKSHOP and JOINT BESTSDI &  
NATRISK FINAL CONFERENCE**  
in Sarajevo. We also present results of  
**BESTSDI/EuroSDR Academia - Business Survey**.

We thank all authors for their articles. It was a pleasure working with you!

The best regards!

*Slavko Vasiljević,*

*Faculty of Architecture, Civil Engineering and Geodesy,*

*University of Banja Luka  
Editor-in-chief*



BESTSDI & NatRisk  
Project  
Final conference

Sarajevo, 03 - 05 September 2019

Venue:  
University of Sarajevo Rectorate  
Faculty of Civil Engineering

Reaching October 14<sup>th</sup>, 2019, BESTSDI project came to its end after full three years of its implementation. It was very interesting period in which project consortia, consisting out of 16 partners at the university level and 22 partners at the level of faculties, and covering wide range of study programmes .....



*But, as everything in the world, end of one activity is just beginning of another new, and therefore formal end of BESTSDI project is initiative for new activities and projects among the consortia partners. BESTSDI project is definitely good platform for this!*

*Željko Bačić, Project Coordinator*

*Faculty of Geodesy, University of Zagreb*



**BESTSDI Newsletter** is a quarterly e-newsletter by Erasmus+ KA2 Capacity Building in the field of Higher Education "Western Balkans Academic Education Evolution and Professional's Sustainable Training for Spatial Data Infrastructures" project (N° 574150-EPP-1-2016-1-HR-EPPKA2-CBHE-JP).



# BESTSDI & NatRisk Final Conference in Sarajevo



The final conference of the BESTSDI and NatRisk projects was held on 4th September 2019, in Sarajevo, Bosnia and Herzegovina.

After three years of hard and successful work, two Erasmus+ Capacity Building projects in the field of Higher Education, BESTSDI (Western Balkans Academic Education Evolution and Professional's Sustainable Training for Spatial Data Infrastructures) and NatRisk (Development of Master Curricula for Natural Disasters Risk Management in the Western Balkan Countries) are coming to its end. The results achieved were presented at the joint Final conference of those two projects at the University of Sarajevo, Bosnia and Herzegovina. The reason we organized a joint Final conference lies in the fact that project teams have recognized interconnections between those two projects. Both projects rely on spatial data and need to build standardized infrastructure for collection, storage and exchange of spatial data. It will enable efficient use of those data in many fields of human activities, like natural disaster risks management what is the case in NatRisk project.

The final conference was also an opportunity to present results of research conducted on the European level about Academia-Business cooperation requirements towards the establishment of efficient SDI, which has been conducted jointly by BESTSDI project and European Spatial Data Research association - EuroSDR.

This conference has brought together participants from the Western Balkan academic community, prestigious European universities, government and non-governmental sector, professionals in higher education and curriculum development, information and communication industries, security, as well as resource and risk management.

*Suada Džebo*





# 12<sup>th</sup> Regional Conference on Cadastre and Spatial Data Infrastructure



The 12<sup>th</sup> Regional Conference on Cadastre and Spatial Data Infrastructure, hosted by the Federal Administration for Geodetic and Real Property Affairs, was held in Neum on 4-6 September 2019. Topic of this year's Conference was „The role of the national mapping and cadastre agencies in the process of establishment and implementation of NSDI“. The Conference gathered directors of ten cadastral agencies of Western Balkans, together with their associates, donor representatives (SIDA, JICA), World Bank representatives, representatives of the Surveying and Mapping Authority of Sweden, Norway and the Netherlands, representatives of EuroGeographics, of UNGGIM, of CLGE etc.

The Conference was consisted of three sessions, the presentations were made by representatives of the cadastral and cartographic agencies of the region as well as presentations by international organizations and projects. During the Conference, many meetings with donor representatives and international organizations were held.

At the XII Regional Conference on Cadastre and Spatial Data Infrastructure was presented Erasmus+ BESTSDI project. Project activities and results were presented in a presentation **BESTSDI project: 2016. - 2019. overview and outcomes** prepared by prof. Željko Bačić and Vesna Poslončec-Petrić.

A Memorandum of Cooperation between Western Balkans Agencies for Cadastre, Cartography and Spatial Data Infrastructure was signed within XII Regional Conference on Cadastre and Spatial Data Infrastructure, and main purpose of the signed Memorandum is strengthening cooperation and exchange information and common access to EU funds and other financial and donor organizations.

*Vesna Poslončec-Petrić*



**12 REGIONALNA  
KONFERENCIJA**  
O KATASTRU I INFRASTRUKTURI PROSTORNIH PODATAKA  
Neum, 4.-6. Rujna 2019.

# Academia - Business Survey

A 'BESTSDI/EuroSDR Academia-Business Survey on needs and cooperation in the field of Spatial Data Infrastructure (SDI)' was undertaken in June 2019 with a strong focus on the impact on labour market and society. A questionnaire was sent to potential stakeholders in Western Balkan and European Union. The questionnaire was prepared and distributed in Albanian, Croatian, English, Macedonian, and Serbian languages and contained 19 questions dealing with the knowledge and skills provided by academic institutions in field of SDI, academia-business cooperation and its influence on labor market, SDI-future, and hampering factors. In total, we received 134 responses of which 72 were from the Western Balkan and 62 from the European Union. From the survey, it appears strongly that the lack of qualified personnel is a major bottleneck for the further development of SDI (in particular relevant for the Western Balkan region). Academic SDI-education is considered as very relevant but needs to be better alignment with the technological developments (such as Big Data, Blockchain, Linked Data, Artificial Intelligence). The labour market expects that professionals have basic knowledge and certain advanced skills related to cartography, earth observation, photogrammetry, data analytics/modelling/manipulation. Companies find academic SDI-education important for organizing workshops/seminars, sharing experiences and running possible joint project. It also appears that Vocational Education and Life-Long Learning are also relevant for the labour market although less important than academic SDI-education. The results were presented and discussed at the Final Conference (Sarajevo, 3 September 2019).

*Joep Crompvoets*



## Presentation of BESTSDI project on BESTSDI & NatRisk Final Conference in Sarajevo

The joint BESTSDI & NatRisk Final Conference was held in Sarajevo on the 4<sup>th</sup> September. The conference was divided into three parts as follows: Opening ceremony, BESTSDI and NatRisk in a nutshell, and BESTSDI & NatRisk impact, synergy and perspectives. In accordance with the thematic parts of the Conference, presentations capturing in detail project activities and results, as well as possible future cooperation, were delivered.



In the first part of the Conference, after the welcoming address by the rector, deans and other officials, Professor Bacic, the chief coordinator of the BESTSDI project, from the University of Zagreb, presented the main goals and results of the project. In the introductory part of the presentation, he explained the SDI concept and pointed out the significance of spatial information in the functioning of modern society and everyday life. In addition to the presented project objectives and tasks within the work packages, the focus was placed on the main accomplished project goals as follows:

- In-depth research on the existing situation in WB has been conducted
- 80 teachers were trained through two summer schools in Split
- 15 SDI laboratories have been established and equipped with 300 pieces of ICT equipment and 20 pieces of sensor tools
- Project SDI curriculum has been developed covering 10 themes and some 70 topic areas
- 15 Annual National SDI Reports have been produced
- 9 Project workshops and 2 conferences have been conducted with some 520 participants
- In 116 courses SDI content from developed curriculum has been lectured during the 3rd year of project lifetime for some 2.600 students attending them
- 36 LLL SDI courses have been conducted for several hundreds of professionals

Prof. Bacic particularly emphasized one of the main project results, which is the very successful cooperation of partner universities, cooperation with other projects, as well as with the wider SDI community at the level of each country.

Within the second thematic part dubbed BESTSDI and NatRisk in a nutshell, there were four presentations that presented and discussed specific results of the project. The development of the SDI project curriculum and its implementation was presented by Danny Vandenbroucke, Catholic University of Leuven, who outlined the steps in designing and implementing the project curriculum, starting with an inventory of existing curricula, development, localization and implementation, to student evaluation. He pointed out that the project curriculum was designed as building blocks around SDI topics, and that not a one-fits-all curriculum but rather a 'Cookbook' from which a menu can be chosen and curricula can be designed. Vandenbroucke concluded that a total of 116 courses were attended by 2,605 students, who stated that they were satisfied with new and improved curricula.

Establishing human and technical capacities for advanced SDI teaching was presented by docent Suada Dzebo, University of Sarajevo. The focus of her presentation was on the necessity to build capacities and prepare teaching staff for SDI lectures, which was implemented through the project in the form of two summer schools. The first summer school was held on July 3-7, 2017 at the University of Split, with 42 participants.

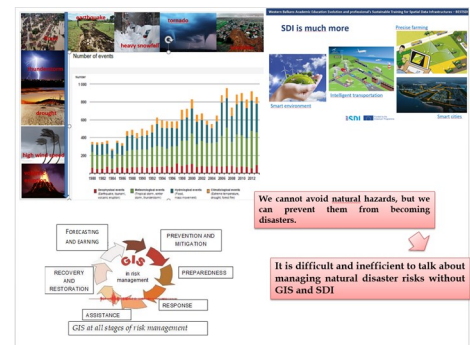
Summer school had the following goals:

- transfer theoretical and practical knowledge about SDI mostly from program countries to partner countries;
- transfer teaching methods and approaches in teaching and implementing of the SDI;
- exchange relevant and valuable information and ideas across teachers.





The second summer school was also held in Split, on June 26-30, 2018 and was attended by 50 participants. In this summer school, the focus was on examples of lessons and exercises, along with plenary and parallel sessions where ideas, knowledge, and experiences were shared. Docent Dzebo particularly highlighted a very important component of the BESTSDI project related to the procurement of equipment, which ultimately resulted in the acquisition of 193 computers, 31 laptops, 6 servers, 22 SSDs, 10 projectors, 17 Googles & 3D glasses, 11 GNSS receivers, 5 drones, and 1 total station. 15 SDI laboratories were equipped, concluded docent Dzebo.



For the purpose of dissemination and transfer of knowledge, the BESTSDI project advocates Introducing LLL programs to a broad spectrum of professions and professionals. The importance of the LLL program, through the examples of two LLL courses held at the University of Novi Sad, was presented by Prof. Dusan Jovanovic. Namely, in June 2019, the Faculty of Technical Sciences from Novi Sad held two LLL courses: SDI in Agriculture and SDI and Smart Cities. The three-day courses consisted of a theoretical and practical part which took place at the Geoinformatics Laboratory. The implementation of LLL courses has shown the need to promote SDI, as well as to develop and implement LLL courses as a way of strengthening the cooperation of key stakeholders and data users, stated Prof. Jovanovic.

Once again, another important result of the BESTSDI project, namely the implementation of 36 LLL SDI courses that were conducted for several hundred professionals, should be noted.

Prof. Mirza Ponjavic, University of Tuzla, presented and discussed the significance of networking with other stakeholders in national and European SDI surrounding. In the introductory part of the presentation, he pointed out the fact that the results and findings from national reports indicate needs for: new curricula, human and technical capacities and the continuation of professional education support the establishment and development of SDI. However, the questions of how these needs should be implemented and how the sustainability of the project could be ensured, remain outstanding. Prof. Ponjavic stated that one of the ways lies in the networking with other stakeholders in regional and European SDI surrounding. In the context of SDI development, Universities must play a leading role, through their activities in research, technological development monitoring, and education. It is important to mention the effects related to participation opportunities in the European academic and professional environment as well at the national level. They are related to new projects resulting from the collaboration of partners in this project (e.g. GEOBIZ) or other projects (e.g. participation in Copernicus Academy), said prof. Ponjavic. Through the BESTSDI project, excellent cooperation with partners has been established and it will open a new space for cooperation, concluded Prof. Ponjavic at the end of his presentation.

The last part of the workshop focused on BESTSDI & NatRisk impact, synergy and perspectives. Four presentations were provided as follows:

- Modern interdisciplinary SDI and spatial concepts as a platform for new curricula's, Zlatko Srbinoski, University of Ss Cyril and Methodius Skopje;
- Impact of NatRisk on the Western Balkan HEI's, Kurt Glock, University of Natural Resources and Life Sciences, Vienna;
- BESTSDI & NatRisk synergy and future cooperation (MOGISMA), Emina Hadžić, University of Sarajevo;
- Erasmus+ CBHE GEOBIZ project, Vesna Poslončec Petrić, University of Zagreb.



The presenters showed the importance, current relevance, and possibilities of synergy and cooperation between the universities in the future, which is already taking place through approved projects and projects under preparation.

The BESTSDI project has successfully achieved its goal, with impressive numbers and results in support. Additionally, the success of the project is also reflected in new friendships and the desire to continue cooperation.

*Melisa Ljuša*

# BESTSDI PROJECT

## \* FINAL WORDS \*



Reaching October 14th, 2019, BESTSDI project came to its end after full three years of its implementation. It was very interesting period in which project consortia, consisting out of 16 partners at the university level and 22 partners at the level of faculties, and covering wide range of study programmes (geodesy, geoinformatics, geology, mine, agriculture, forestry, geography, computer sciences, civil engineering and architecture) took a challenge to develop curricula on Spatial Data Infrastructure (SDI) and introduce it in to the partner universities study programmes. It was a hard work, first to come to common understanding about SDI, to identify needs of society and partner universities, to develop curricula itself, define and purchase necessary equipment for SDI labs and finally implement courses in to the partners study programmes. But our ambitions were bigger, and additional effort has been made towards other SDI stakeholders in partner countries to develop network of stakeholders involved in development of national SDI and redefine role of academic institutions in this process. In figures we developed curriculum covering 40 topics, installed 15 SDI labs, introduced SDI content in 142 courses and delivered 14 annual national SDI reports, just to mention some of our results.

Those project results speak for itself. Additional value delivered by the project is new network of academic institutions which has been established through the project and which continues its cooperation beyond the project lifetime. On one side through the continuation of BESTSDI activities and on other through new projects, like GEOBIZ. In this network are included not only partner universities, but also companies and governmental institutions creating preconditions for further initiatives and cooperation in field of SDI and other related areas.

The final benefit from the BESTSDI project is that we found and established many new friendships among the colleagues, which are further developing and strengthening ties between our teams and institutions. As we know, in academic world such ties are stronger then official agreements and result in long-lasting cooperation. This is also place to thank all the partners and team members for their contribution and good spirit during the project life-time.

But, as everything in the world, end of one activity is just beginning of another new, and therefore formal end of BESTSDI project is initiative for new activities and projects among the consortia partners. BESTSDI project is definitely good platform for this.

*Željko Bačić, Project Coordinator*

*Faculty of Geodesy, University of Zagreb*



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