CZECH AID

CZECH GEOLOGICAL SURVEY

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Newsletter

of the project Innovation of Geological Information Systems in Bosnia and Herzegovina

Project duration:	01/2023–12/2027
Project manager:	Czech Geological Survey (CGS)
Project partners:	Geological Survey of Federation of Bosnia and Herzegovina (FZZG), Geological Survey of Republic of Srpska (RZZGI)
Source of funding:	Czech Development Agency (CDA)

https://cgs.gov.cz/projekty/682800-gis-bih

PRESENTATION OF THE PROJECT

The starting points of the project

The project "Innovation of Geological Information Systems in Bosnia and Herzegovina" was prepared on the basis of the concept submitted to the Czech Development Agency (CzDA) in 2020 by the Geological Survey of the Federation of Bosnia and Herzegovina (FZZG) and the Geological Survey of the Republic of Srpska (RZZGI). Both organizations emphasized the need for better management and dissemination of subsurface data to support spatial planning and decision-making, as well as, for example, future research on renewable energy potential. The technical infrastructure and knowledge in both organizations is not currently at a level that would allow this.

Project purpose

The project aims to contribute to the development of sustainable management and access to geological data and knowledge of the two geological surveys in Bosnia and Herzegovina, in line with the UN 2030 Agenda for Sustainable Development.

Project objectives

The objectives of the project are to assist public institutions in improving the geological information system, to increase the professional competence of local experts and government staff, and to improve data management, access, presentation and dissemination of data and information.

The project, prepared by the Czech Geological Survey (CGS), is based on information obtained from communication with both local geological surveys and the knowledge and experience of the CGS. Based on the inventory, technical infrastructure and related procedures have been designed. This includes the development of a strategy for archive, data and metadata management. Necessary technology has been purchased and will be supplied, and implementation of the proposed system will be supported. Local staff have been trained in the specific technologies. Presentations of the results will improve the ability of local stakeholders to use geological data. Technical workshops focusing on the transfer of acquired know-how within the geological themes will be conducted by CGS experts.

PROJECT OUTPUTS

1 Design of technical infrastructure and related procedures

Based on the findings, the technical infrastructure and related procedures were designed. This includes the design of a strategy for archive, data and metadata management.

2 Innovation of information systems

The necessary technologies will be provided and the implementation of the proposed system will be supported.
Local staff will be trained in the specific technology.

3 Improving the ability of Bosnian geological surveys staff to use geological data

Presentation and dissemination of results will improve the ability of local geological services staff, representatives of the authorities and the public to use geological data. Expert workshops aimed at transferring the acquired know-how on geological topics will be led by CGS experts. Lectures by CGS specialists at universities in Bosnia are being organized and further cooperation is being prepared.

THIS YEAR'S PROJECT RESULTS

Archival professional documentation and its modern processing

In 2024, joint work continued on the computerization of the archival documentation of the FZZG and RZZGI geological services.

These activities are addressed under subactivities 1.2.2 "Proposed strategy for a unified archive of paper records, possible workflow for digitizing paper documents" (Output 1) and 2.1.2 "Development of the database and related user applications, other tools, and data repositories for processing and accessing archival documents" (Output 2).

The current main objective is to develop a database structure that will contain data for each registered and deposited report in both archives of the Bosnian Geological Survey. The structure, i.e. the registered items with their name, meaning, type and link to future data, will be common and will include all existing registered data types in both services and any data requested by the Federal Archive of Bosnia and Herzegovina. For this purpose, a working excel spreadsheet has been created where all data is shared and processed. The items listed so far will need to be critically revised, new required fields added and their types modified, with the preferred option being the use of editable code lists (codebooks), which have the advantage of maintaining the accuracy and unambiguity of the data entered and thus avoiding the possibility of entering erroneous data.

There was also a renewal of staff in both organizations in Bosnia and Herzegovina during the year. The further rejuvenation of the teams is clearly a positive development, especially given the quality of experience and qualifications of the new researchers.

The next work progress expected this year is the completion of a mutually agreed database structure, which will inform the commissioning of subsequent programming work. Depending on the complexity and capacity of the CGS researchers, it will then be decided whether the programming of the new database and related user applications will be undertaken by the IT department's own staff or whether this matter will be subcontracted. The latter would involve more complex administration and possible time delays if there are complications in the tendering process or possible appeals. However, there is no need to anticipate such complications at this stage, but to concentrate on completing the planned work this year. «

Data sources of geological surveys of BiH – inventory, metadata, management

One of the basic components of data management in organizations is an overview of the data sources used and accessed. Therefore, since the beginning of the project, a detailed inventory of data sources has been carried out in both partner organizations. The inventory has a fixed structure and will be used for the creation of metadata.

The individual data sources (map documents and their digital processing) were physically inspected by the GIS specialists of the CGS during a face-to-face meeting on **16 April 2024 in Zvornik** and on **17–18 April 2024 in Sarajevo**. During both meetings, the storage and security of the data were observed, as well as the way it is updated, its language, quality and scope. The relevance and suitability of each data source for other parts of the project was discussed with the management of the geological surveys. The appointment of metadata editors and expert guarantors for each dataset in each organization was also agreed. The inventory was then supplemented with non-mapped data sources, both geoscientific (e.g. archives) and administrative (e.g. staff directory).

The project also includes the customization and installation of local metadata catalogues for both geological services and assistance with setting up the necessary workflows. For this purpose, the needs of the individual organizations have been mapped and a technical specification of the metadata catalogues has been drawn up, which should be implemented in 2025. For the creation of metadata, the project is so far using the EGDI environment – the European Geological Data Catalogue (https://metadata.europe-geology.eu/). Metadata editors are being trained on this platform and the first dozen metadata records of mostly spatial data have been published there. At the same time, FZZG has updated its original metadata in the National INSPIRE FBiH Metadata Catalogue (SDI FBH Metadata Catalog).

Once the local metadata catalogues are implemented in the systems of the partner geological services, it is planned to transfer their metadata records from the EGDI catalogue. The metadata will then continue to be updated only in the local systems and will be transferred to the national (SDI RBH Metadata) and international catalogues (EGDI) using csv services. «

Meeting in Zvornik on 16 April 2024 focused on data sources and their processing at the workplace.

Meeting in Sarajevo on 17–18 April 2024 focusing on data sources and their management in the workplace.

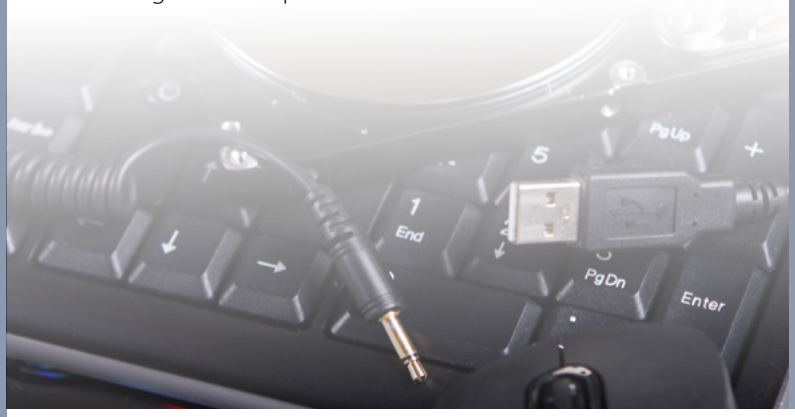
Implementation of technical infrastructure

The tender documents for the hardware purchase were prepared in the first half of 2024. The tender documents were revised several times in collaboration with the CRA and the final version of the tender was published on the NEN procurement profile on 6 June 2024.

The tender was closed on 3 June 2024 and the evaluation committee meeting was held on 7 June 2024. The tender was won by Proact Czech Republic s.r.o.

The CRA contract with Proact Czech Republic s.r.o. was concluded on 18 June 2024 and published in the Register of Contracts.

The infrastructure part of the hardware was delivered to the Czech Geological Survey at the beginning of August, where the preparation of the infrastructure components for the individual partners took place in August and September.



The preparatory work included the following activities:

- Firewall configuration and network segment creation.
- Configuring switches and virtual networks.
- Configuring the disk array and creating partitions for virtual servers and shared data.
- Configuring and installing virtualization servers.
- Creation and installation of virtual servers.
- Creation of an Active Directory domain for Zvornik.

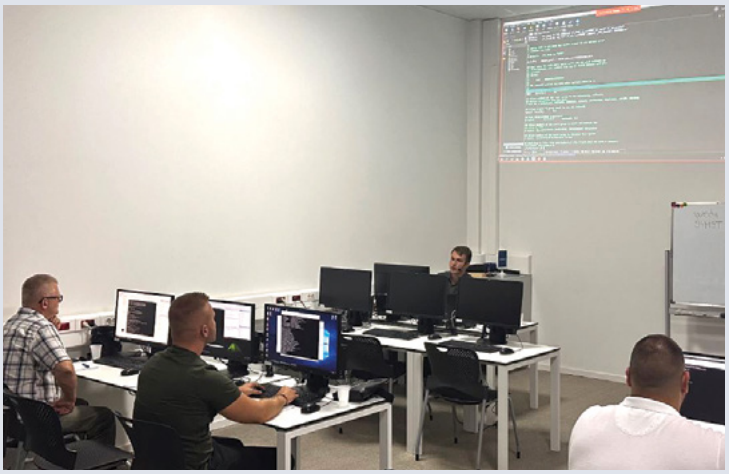
The configured equipment was packaged and handed over to Proact for delivery to our partners' sites in Bosnia and Herzegovina. «

Certified courses and staff training

The project included a course "Introduction to Windows Server Administration".

The course "Introduction to Windows Server Administration" was held in Banja Luka from **27 May to 29 May 2024**. The participants of this course are trained in the implementation and maintenance of small computer networks. The course helps them to become familiar with concepts such as "Active Directory" and "Server Performance Management" through a series of practical lectures. The course is designed for employees of the Geological Service of the Republic of Srpska and the Federal Institute for Geology, who will learn the entire process of installing, managing roles, managing storage and maintaining a Windows Server environment. «

Within the project, the course "LPIC-1: Linux Administrator" was held



From September **2 to September 6, 2024**, the course entitled "LPIC-1: Linux Administrator" was held at the training center "LANACO" in Banja Luka. The course was attended by representatives of the Geological Survey of the Republic of Srpska and the Federal Institute for Geology.

The aim of the course was to provide the participants with the basic knowledge and skills necessary for Linux system administration. Participants were introduced to the basic concepts of Linux system administration, including installation, configuration and maintenance of the system, as well as troubleshooting and working with the command line. «

The course "Identity with Windows Server 2016" was held as part of the project

Representatives of the Geological Survey of the Republic of Srpska and the Federal Institute for Geology attended the course "Identity with Windows Server 2016" from **October 14 to October 18, 2024**, in Banja Luka, at the "LANACO" Educational Center, as part of the project "Innovation of Geological Information System in Bosnia and Herzegovina".

The goal of the course is to provide participants with advanced knowledge of the configuration, implementation, troubleshooting, and security of the Windows Server 2016 system. During the training, attendees acquired knowledge about configuring Active Directory Domain Services (AD DS) and other important roles of Active Directory, including Active Directory Federation Services (AD FS) and Active Directory Certificate Services (AD CS).

The course is designed not only to enhance the technical skills of participants but also to improve efficiency in managing information systems in the field of geology. The knowledge gained will contribute to better project implementation in this area and strengthen the capacities of institutions.

Following the completion of this course, there are plans to continue training in other information technology courses, indicating a continuous commitment to the professional development of employees. «

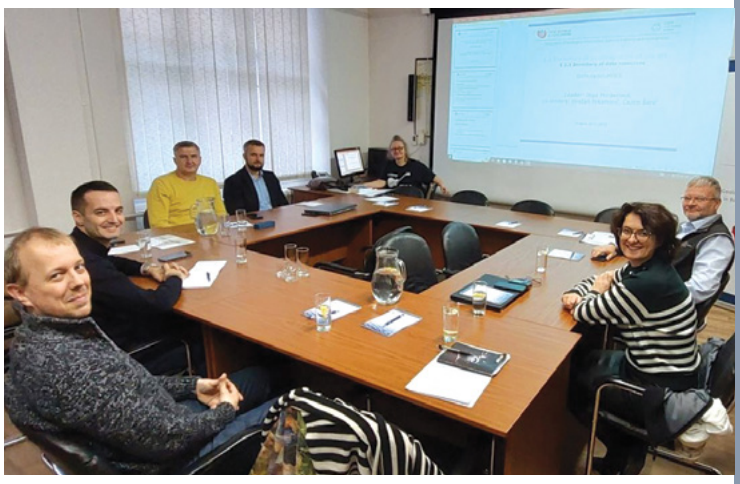
PROJECT MEETINGS AND EVENTS

Project kick-off meeting in Bosnia

On **4–6 September 2023**, the **kick-off meeting** of the project took place in **Jajce**, Bosnia. The meeting was attended by the leading representatives of the project partners – the Czech Geological Survey, the Czech Development Agency, the Geological Survey of the Federation of Bosnia and Herzegovina and the Geological Survey of the Republic of Srpska, as well as senior staff of the Embassy of the Czech Republic in Bosnia and Herzegovina, the Ministry of Energy, Mining and Industry of the Federation of Bosnia and Herzegovina, the Ministry of Energy and Mining of the Republic of Srpska and the Deans of the Faculty of Mining and Geology of the University of Banja Luka and the Faculty of Mining, Geology and Civil Engineering of the University of Tuzla.

The agenda included an introduction of the project, its expected deliverables and timeline, roles and responsibilities of the project participants and an assessment of the baseline assumptions and potential risks. Participating organizations presented their main activities and information systems and their expectations from the project. There was a very open and friendly discussion on the next steps of the project, including sub-tasks and responsibilities and a summary of the main project deliverables. A meeting of the project advisory committee was also held to discuss issues related to the work schedule, deliverables, communication setup, and risk management. «

November meeting in Prague



On 20–21 November 2023, the project held a **working meeting** at the CGS headquarters **in Prague**. The meeting was attended by senior representatives of the project partners – the Geological Survey of the Federation of Bosnia and Herzegovina, the Geological Survey of the Republic of Serbia, the Czech Development Agency and the CGS team led by Dana Čápová.

The main objective of the meeting was the review and final approval of the technical infrastructure proposal prepared by ČGS. Important topics were also the review and approval of the certified training proposal, discussion of the communication plan with universities and the plan for popularization and awareness raising. As the end of the first year of the project approached, an overview of the activities in 2023 was reviewed and the plan for 2024 was presented.

The first day of the meeting was dedicated to a technical workshop focused on the inventory of existing data and the system of processing, digitization and presentation of CGS archival documents as a model for analysis and preparation of similar workflow and application support. «

Information about the project in the Czech Geological Survey Newsletter World of Geology 1/2024

The first issue of the Czech Geological Survey Newsletter focused on an exclusive interview with the key staff of this important project – RNDr. Dana Čápová and Richard Binko. These specialists shared their views and experiences, shedding light on the objectives, importance and wide range of activities that the project encompasses. «

Meeting with representatives of the Czech Geological Survey in Zvornik and Sarajevo

Personal meetings on **16 April 2024 in Zvornik and 17–18 April 2024** in **Sarajevo** were of great benefit. On this occasion, the GIS specialists of the CGS physically inspected the map documents and their digital form and discussed all recorded inventory items in the different geoinformation systems, their storage, method of updating, quality and scope, and discussed their relevance for further parts of the project. All data sources were checked for their coordinate system and a short presentation on coordinate systems was given in both organizations. «

The individual data sources were presented by their current technical or professional administrators. The inventory check was also supplemented with non-mapped data sources, both geoscientific (e.g. archives) and non-geoscientific (e.g. employee directory).

A briefing on editing metadata records was given during the visit to Zvornik.

The technical parameters of the future metadata system were discussed in both organizations.

Joint working meeting of project partners in Prague

The joint working meeting of the project partners took place on **20–22 June 2024 in Prague**. In addition to the project partners, it was also attended by representatives of Bosnian universities – Svjetlana Sredić (Dean of the Faculty of Mining in Prijedor, University of Banja Luka) and Sabid Zekan (Vice Dean of the University of Tuzla).

One of the objectives of this meeting was to introduce the project to the two university representatives. The main objective was the participation of the Bosnian partners in the Geology Day that CGS organized on 20 and 21 June 2024 at the premises of CGS at Klárov 3, Prague 1. This activity could inspire the visitors to organize a similar event in Bosnia and help to popularize geology for schools and the public. «

From **10 to 12 September 2024**, a regular meeting dedicated to the presentation of the project results was held in Mostar. This time the event was organized by the Federalni zavod za geologiju (FZZG) in Sarajevo.

Presentation of project results in Mostar

In addition to experts from the Czech Geological Survey and the two Bosnian geological surveys, this meeting was attended by representatives from the Czech Development Agency (online), the Czech Embassy, the Ministry of Energy and Mining, the Parliamentary Assembly of Bosnia and Herzegovina and Bosnian universities.

The opening ceremony was enriched by a speech by the Czech Ambassador to Bosnia and Herzegovina, Jana Lolić Šindelková, who emphasized the key role of this project in strengthening the expertise of local specialists, improving data management and information availability, as well as promoting cooperation between the two geological services.

During the meeting, the progress made so far in the different thematic areas of the project was presented, which is necessary to meet the main objective of improving access to geological information in Bosnia and Herzegovina. The agenda also included a meeting of the Advisory Committee, which addressed key issues for the successful progress of the project. «

CGS strengthens geological education and cooperation in Bosnia and Herzegovina

Within the framework of the development project Innovation of Geological Information Systems in Bosnia and Herzegovina, funded by the Czech Development Agency, a series of lectures took place on **5-7 November** at several Bosnian universities – University of Tuzla, University of Banja Luka, and University of Travnik. The event was organized by the Czech Geological Survey (CGS) in cooperation with the Geological Survey of the Federation of Bosnia and Herzegovina (FZZG) and the Geological Survey of the Republic of Srpska.

The CGS team, consisting of Jakub Kryl, Jan Jelének, Ondřej Švagera and Lucie Koucká, presented to the students the latest technologies used in geology, including remote sensing methods. The lectures were also attended by local experts Cvjetko Sandić (RZZGI) and Ferid Skopljak (FZZG).

The aim of the event was to motivate students to continue studying geology and to strengthen cooperation between Bosnian universities and geological surveys. The lectures were addressed not only to university students of geology, but also to students of the Technical High School in Banja Luka and representatives of the professional community. University students were also given the opportunity to gain practical experience through internships with local geological surveys. «

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