BORIS2

Cross BOrder RISk assessment for increased prevention and preparedness in Europe: way forward

PROJECT SNAPSHOT

Project consortium:

UNIVERZA V LJUBLJANI
University of Ljubljana

DCNAustria
Disaster Competence Network Austria

UCG
Univerzitet Crne Gore

CI3R

TED UNIVERSITY

Associated partners:

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BORIS2 is a project funded by the Directorate-General for European Civil Protection and Humanitarian Aid Operations (DG ECHO)

Project Objectives

BORIS2

The goal of BORIS2 is to deliver a methodology and tool to support stakeholders to undertake strategic decisions to improve emergency planning, building on the findings of BORIS.

Considering the need expressed by local civil protections involved as stakeholders in BORIS, particularly to enhance the multi-risk analysis methodology proposed for an effective use towards emergency planning, the BORIS2 goal is to deliver a methodology and tool to support stakeholders to undertake strategic decisions to improve emergency planning. The multi-risk analysis methodology developed in BORIS, that was implemented at municipality scale, is modified for application at sub-municipal level (e.g. for square grid cells) considering relevant multi-risk scenarios. This enables to highlight urban areas that are most impacted by single and multiple risks for a better planning of emergency phase. Moreover, critical infrastructures and their connections are included for the evaluation.

Expanding on the concept of Limit Condition for the Emergency and its associated evaluation model proposed by the Italian Civil Protection Department, which is aimed at checking the physical efficiency after a seismic damaging event of the emergency system of urban settlements, a multi-risk approach that could be applied also in cross-border regions is proposed delivering a comprehensive methodology for institutions operating in different national context.

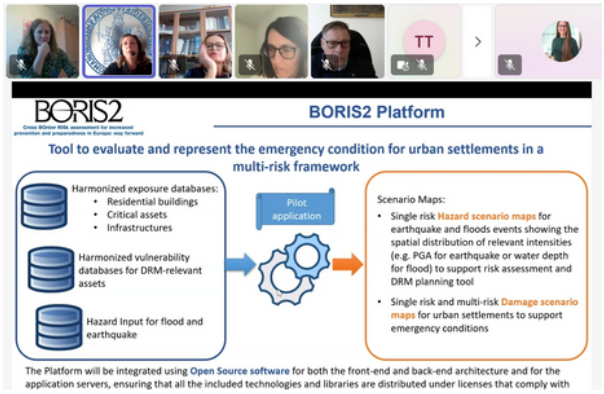
A "scenario-driven" approach is tested for the assessment of the impacts of seismic, flood or multi-risk events on assets and infrastructures relevant for emergency management. Results of BORIS2 are be integrated in a web-platform developed starting from the existing BORIS platform, ensuring its interoperability.

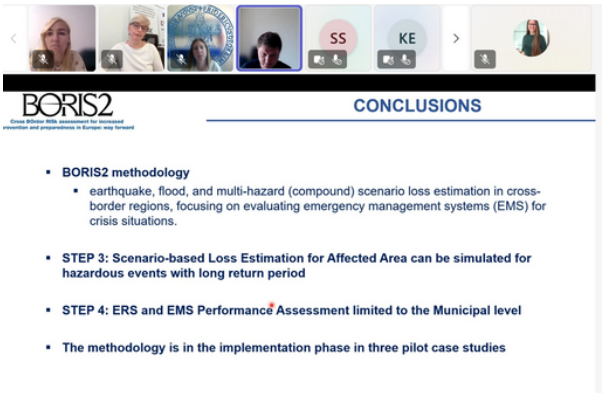
Activities & Events

The first project event was the **kickoff meeting** on February 8, 2024 which was held as a hybrid event – in person we met at Aula Manfredi Romano at the Department of Structures for Engineering and Architecture of University of Naples Federico II, Naples, Italy.

In summer 2024, the BORIS2 project team published an **interview article** with Italian experts Daniela Di Bucci (Italian Civil Protection Department) and Aldo Primiero (Friuli-Venezia Giulia Civil Protection) on science in civil protection and cross-border collaboration which was published as a UCPKN story.

On January 30, 2025, the project team hosted the first of two **webinars** - "Tackling Urban Disaster Risks: Barriers, Data Needs and Frameworks in a Multi-Hazard Context". Findings of work package 2 (context analysis and needs assessment) were shared and there was external input as well – e.g., two experts from the Office of the State Government of Styria, Austria talked about the contingency plan for floods for the river Mur. The second webinar (June 12, 2025) focused on the methodology for cross-border emergency management planning and also featured two external keynotes. In total, these two webinars attracted 100 participants. The recordings of both webinars are available on the UCPKN platform.

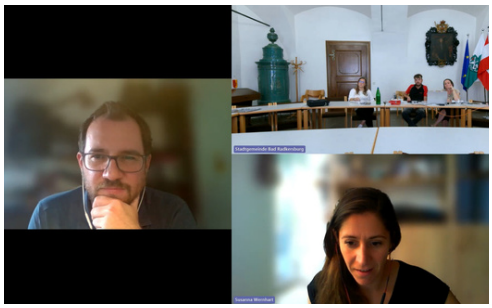




Throughout year 2 of the project, the methodology (see section on key results) developed within BORIS2 was applied in three multi-country and cross-border pilot applications to be demonstrated via the web-platform. This allowed to evaluate alternative seismic, flood or multi-risk scenarios, to assess the condition of the Emergency Management System and the efficiency of the emergency response units in selected hotspots, also visualizing maps to support efficient emergency management planning.

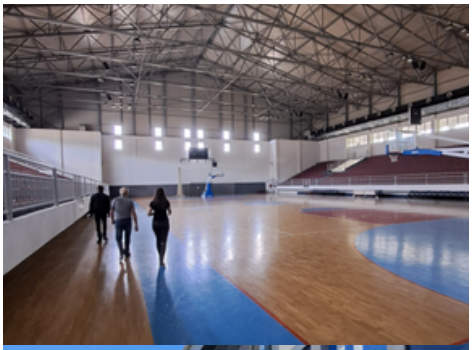
For these pilot activities, EMS (Emergency Management System) data was collected to allow evaluation of EMS efficiency in multi-risk scenarios according to the BORIS2 methodology. Several lists of EMS units were recorded and inserted in web-platform:

Pilot 1: Italy-Slovenia (Gorizia/Nova Gorica): In Italy, OGS was in touch with the Civil Protection Department of the Friuli Venezia Giulia Region. In Slovenia, the University of Ljubljana (UL) contacted civil protection representatives from Nova Gorica. The representatives helped to obtain the data that are not publicly available, such as where the gathering areas in the municipalities are, and the no. of available fire and rescue vehicles.



Pilot 2: Austria-Slovenia (Bad Radkersburg/ Gornja Radgona): Like for Pilot 1, UL prepared the list of EMS units in Gornja Radgona. In Austria, DCNA was in touch with representatives from the municipality of Bad Radkersburg. In an online meeting, they discussed the available EMS data and how different datasets could be merged.

Pilot 3 - Montenegro: For Pilot 3, the University of Montenegro conducted field visits to Berane. During the first visit, key infrastructure buildings part of the local EMS were mapped. The team visited selected buildings to verify their location and condition (e.g., a football stadium & a sports hall), collected GPS coordinates and basic descriptive data, and developed a geospatial dataset. The second visit involved a meeting at the municipality of Berane where BORIS2 and its objectives were presented. The municipality team helped in the completion of the EMS dataset and facilitated access to available documentation.



The first of **three in-person BORIS2 workshops** was hosted by DCNA and took place at BOKU University in Vienna on February 26, 2025. The event featured various presentations (also from external experts), each followed by an in-depth discussion in small groups. The overall goal was to get feedback on the methodology proposed in work package 4 of the project.

OGS hosted the second workshop in Trieste, Italy, on May 13, 2025. The event not only saw the presentation of the prototype of the updated BORIS2 platform, but also insights from external stakeholders (such as representatives from regional civil protection and first responders). Like in Vienna, the workshop was followed by an internal meeting to discuss the next steps within the project.

The third workshop, hosted by the University of Montenegro in Podgorica on September 30, 2025, focused on coordinating the next steps with local stakeholders in Montenegro – e.g., the Directorate for Emergency Management within in the Ministry of the Interior. In the internal meeting on the next day, the team aligned the activities related to the pilot regions and the platform.

The **Final Conference** in Pavia, Italy, on December 11, 2025 presented BORIS2's results and was used to discuss how to make use of them in the future, i.e., how the methodology and platform can support cross-border disaster preparedness for floods & earthquakes. The event (hosted by EUCENTRE) gathered the project team and external stakeholders from all over Europe. It was a great opportunity to showcase the project's outputs to its stakeholders and end-users.

Key Results

The following deliverables are publicly available on the UCPKN platform:

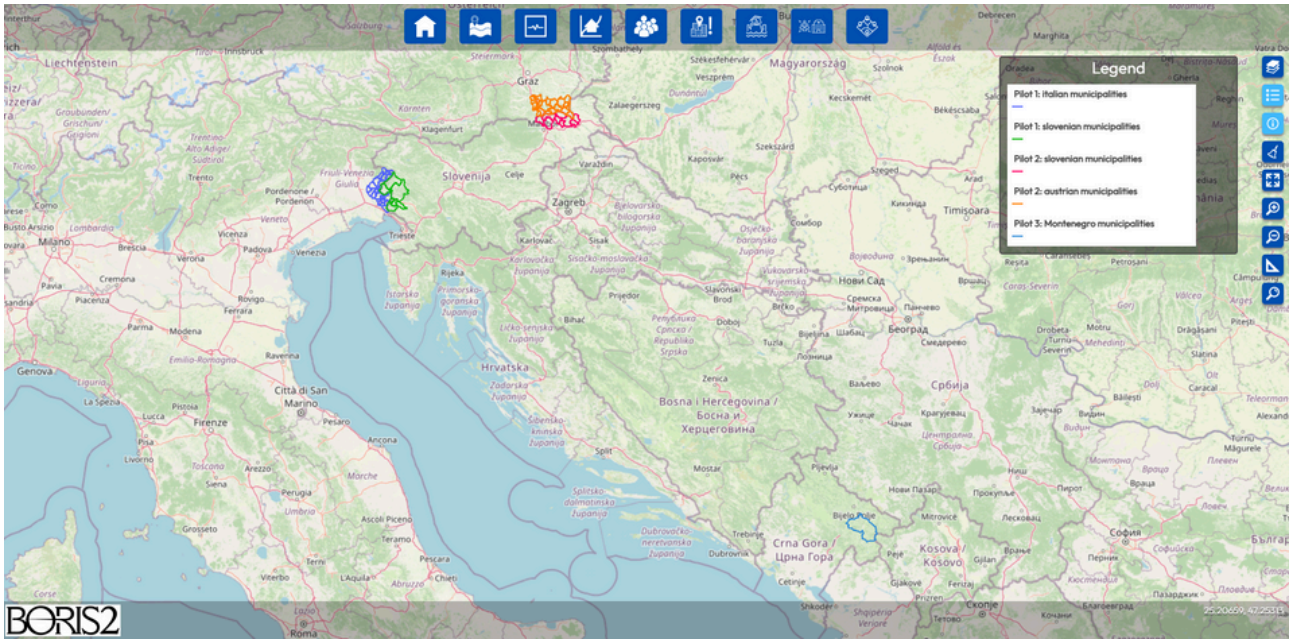
- D2.1 - Comparison of existing schemes and methods for emergency management
- D2.3 - Synergies and Integration of Existing Initiatives Within the UCPM
- D2.2 - Data availability and needs
- D4.1 - Methodology for single risk and multi-risk urban assessment to support emergency condition evaluation
- D4.2 - Tools for urban emergency condition assessment

The project's key results are the methodology and the updated web-platform:

The BORIS2 methodology is a **multi-step framework** developed to simulate earthquake, flood, and compound hazard scenarios, estimate losses in residential buildings and critical structures for emergency response (EMS units), such as hospitals, shelters, fire stations, and coordination centers, and assess the performance of the Emergency Response System (ERS) at the municipal level (see D4.1 for an in-depth description). It supports comprehensive consequence assessment, not only for frequent but also for rare events with long return periods, providing a robust basis for cross-border risk evaluation and EMS performance assessment.

The **BORIS2 platform** is a tool to support strategic decisions for better emergency planning; potential users of such tool include civil protection authorities and local and regional governments. Implementing the BORIS2 methodology, it helps evaluation and visual representation of the urban areas that are most impacted by single and multiple risks and supports in the assessment of efficiency of emergency management system including critical infrastructures and their road connections.

To access the platform (pictured below), please contact EUCENTRE.



Publications

Here is an overview of BORIS2 publications and presentations:

- From prevention to emergency: the multi-risk assessment of flood and earthquake in the framework of the European project BORIS2, university seminar, Daria Ottonelli, May 2024
- Multi-risk scenario building and assessment, ROADMAP2 webinar on "Practices of Scenario Analysis in Disaster Risk Management planning", Maria Polese, November 2024
- Cross-border multi-risk assessment towards a shared methodology, Workshop on Boosting Disaster Risk Management Financing, Maria Polese, November 2024
- Enhancing Urban Disaster Risk Management: A Transnational Analysis of Seismic Risk Assessment Frameworks in Europe, Third Croatian Conference on Earthquake Engineering (3CroCEE), conference paper, Anže Babič, Can Baran Aktaş, Christina Rechberger, Jelena Pejović, Marco Gaetani d'Aragona, Maria Polese, Marta Faravelli, Matjaž Dolšek, Mehmet Fırat Aydın, Neja Fazarinc, Nina Serdar, Paolo Ricci, René Kastner, Rıza Secer Orkun Keskin, Serena Cattari, Valerio Poggi, Özkan Kale, March 2025
- A framework for harmonized cross-border seismic risk assessment, Bulletin of Earthquake Engineering, scientific article, Anže Babič, Matjaž Dolšek, Maria Polese, Gabriella Tocchi, Marta Faravelli & Barbara Borzi, March 2025
- Towards a Multi-Risk Framework for Enhancing Emergency Preparedness in Cross-Border Areas: Ongoing Development in the BORIS2 Project, ANIDIS XX 2025, conference paper, M. Dolsek, S. Cattari, B. Di Napoli, V. Poggi, D. Ottonelli, N. Fazarinc, M. Polese, September 2025

Left: Seminar by Daria Ottonelli (May 2024),
top right: DRM Workshop with Maria Polese (November 2024),
bottom right: ANIDIS XX conference (September 2025).

Promotional & Educational Materials

A digital BORIS2 **flyer** was created and circulated online:

To aid with the use of the BORIS2 platform, **training material** was created in all beneficiaries' languages (Italian, German, Montenegrin, Slovenian, Turkish) as well as English. The training material is available directly on the platform.

In addition to the written training material, **short videos** were created, focusing on individual functionalities and panels of the platform. These videos are captioned in all beneficiaries' languages and English:

- General overview of sections/buttons
- Base layers
- Hazards
- Vulnerability curves
- Exposure
- Hotspots
- Step 1
- Step 2
- Step 3
- Step 4

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Keep in touch:

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