Application Form for World Centre of Excellence on Landslide Risk Reduction 2023-2026

1. **Name of Organization**

   University of Ljubljana – Faculty of Civil and Geodetic Engineering (UL FGG) together with the UNESCO Chair on Water-related Disaster Risk Reduction (WR DRR), Ljubljana, Slovenia

   Category 2 Centre IRCAI – International Research Centre on Artificial Intelligence under the auspices of UNESCO together with the UNESCO Chair on Open Technologies for Open Educational Resources (OER) and Open Learning, Institute "Jožef Stefan", Ljubljana, Slovenia

2. **Name of Leader:** Professor Matjaž Mikoš

   Affiliation: University of Ljubljana, Faculty of Civil and Geodetic Engineering
   Contact: Jamova c. 2, 1000 Ljubljana, Slovenia; matjaz.mikos@fgg.uni-lj.si, +386 1 47 68 500
   Core members of the activities: Assist. Prof. Nejc Bezak, Assoc. Prof. Simon Rusjan (both UL FGG), Dr Marko Grobelnik and Mitja Jermol (both IRCAI)

3. **Date of Submission of Application:** April 6, 2023

4. **Activity scale:** Global

5. **Short Title characterizing past and planned activities:** Capacity Building for Landslide Risk Reduction Using Open Educational Resources and New Educational Technologies

6. **Objectives for 3 years**
   (i) The main aim will be to study development in open educational resources and new educational technologies, and to test and transfer available modern electronic tools to the field of capacity building in landslide risk reduction.
   (ii) Secondary aim will be to develop and publish online a web-based observatory for capacity building in landslide risk reduction.

7. **Background Justification**

   Education is an important constitutional part of capacity building efforts for general public, researchers, engineers, other landslide experts, policy makers and other stakeholders, including entrepreneurs and businessmen. New technologies, not only in the field of information and computer technologies, are emerging rapidly and can change the way education helps to sculpture capacity building in landslide risk reduction. Distance learning, hybrid meetings, virtual and augmented reality, gaming, artificial intelligence, machine learning, electronic repositories, big data on landslide disasters and characteristics, and others, all the way to the newest versions of chatbots, offering fully innovative ways of teaching and preparing open-access educational materials. The activities of WCoE will build upon KLC2020 Commitment and its capacity building efforts, and will contribute to the UNESCO Futures of Education global initiative to reimagine how knowledge and learning can shape the future of humanity and the planet - in the field of landslide risk reduction. The WCoE will also allow to test open technologies for Open Educational Resources (OER) and open learning in the field of landslide risk reduction.

8. **Resources available for WCoE activities**

   Young, talented and experienced researchers and academics are active in the leading two institutions, with wide spectrum of experiences in educational techniques and landslide risk reduction that will be brought together in this WCoE. The financial funds are secured by the Slovenian Research and Innovation Agency (ARIS), UNESCO Commission in Slovenia, and the Ministry of Higher Education, Science and Innovation of the Republic of Slovenia. The research budget will be mainly covered through the national 6-year research program "Water Science and Technology, and

Geotechnics", and the activities of the UNESCO Chair on Open Technologies for OER and Open Learning. Furthermore, research co-operation within INTERPRAEVENT (Europe, Taiwan, Japan) and ICL (ULFGG is active ICL member since 2009 & KLC2020 Official Promoter) will be vital for the success of the proposed WCoE. The existing programs and initiatives focused on OER development like Open Education for a Better World, x5gon and Education global observatory will provide a solid starting point for the intended activities.

9. **Description of past activities related to risk reduction of landslides and other related earth system disasters**

The WCoE was active in the past consecutive 3-year periods since 2008, mainly working in the field of landslides in sedimentary rock masses such as Flysch, combining field experimentation and field studies with laboratory experiments and testing, and adding numerical modelling of landslide processes. In the last period, research orientation was also focused on the role of landslide science and technology in patent documents (Mikoš, 2023a), in international standards (Mikoš, 2023b), and in higher education curricula (Mikoš, 2023c).

For the next period from 2023 till 2026, we are proposing a new topic, where we would like to build upon our latest activities in the field of capacity building. The expertise was gained by our active role in the ICL thematic and regional networks, performing research in the IPL projects and bilateral projects with ICL members, working for the journal Landslides, contributing to ICL teaching tools, and serving within ICL-IPL working bodies – not to mention our successful organization of the WLF4 in Ljubljana in 2017. The IRCAI was established recently, and gained worldwide reputation for its activities in the broad field of artificial intelligence (AI). This includes in particular open global observatories for SDGs that are using advanced AI for multimodal and multilingual data analytics, predictions and simulations. The three observatories, namely for Water (SDG1), Education (SDG4) and the Global media observatory (http://eventregistry.org) will be included. In addition, a European lexicographic platform with a complete several linguistic and semantic AI services will be expanded to other repositories and languages as well (http://elex.is). The UNESCO Chair on Open Technologies for Open Educational Resources (OER) and Open Learning at JSI is coordinating a global programme Open Education for a Better World (http://oe4bw.org; Urbanič et al., 2019), one of the largest OER video lectures repository (http://videolectures.net), and the newly developed x5gon OER processing pipeline.

10. **Planned future activities / Expected Results**

There would be two research activities: i) reviewing of existing practices for capacity building in landslide risk reduction, and ii) preparation of selected electronic tools and materials for capacity building, such as web-based landslide observatory, glossary of landslides, etc.

i) Review papers on landslide science and technology used as educational materials and existing OER materials.
ii) Glossary on landslides and landslide risk reduction.
iii) Global curriculum structure on landslides and landslide risk reduction.
iv) Selecting and adapting OER materials to support the global curriculum and open online courses, plus targeted development of missing OR materials.
v) Review the valuable data sources for the purpose of a Web-based landslide observatory.
vi) Web-based landslide observatory with monitoring, analytics and predictive services for better and more informed decision making for landslide risk reduction (draft in Mikoš et al., 2023).

11. **Beneficiaries of WCoE**

The beneficiaries will be members of the world landslide community actively involved into education and capacity building for landslide disaster risk reduction. The results will be disseminated according to the principles of open science, mainly on the web platform, and as open-access contributions to periodicals and monographs.

12. References

Mikoš, M. (2023a). Landslide Research and Technology in Patent Documents. In: Alcantara-Ayala, I. et al. (eds.) Progress in Landslide Research and Technology, Volume 1 Issue 2, 2022. Progress in Landslide Research and Technology. Springer, Cham. https://doi.org/10.1007/978-3-031-18471-0_3

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Orlič, D., Jermol, M. (2010). Training personalization with knowledge technologies and contextualization in LINC 2010: proceedings of the Fifth Conference of Learning International Networks Consortium, May 23-26, 2010 MIT, Cambridge, Massachusetts, USA. https://linc.mit.edu/linc2010/proceedings/session8Orlic.pdf

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http://oe4bw.org – Open Education for a Better World

http://videolectures.net – Open videolectures OER repository

https://elex.is/ – LEXIS - European Lexicographic Infrastructure

http://eventregistry.org – Global Media Observatory