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SAFE-LAND PROJECT

MITIGATING THE RISK OF FLOODING AND LANDSLIDES VIA ARTIFICIAL INTELLIGENCE WITH A VIEW TO EXTREME CLIMATE EVENTS

KICK-OFF MEETING

9 April 2024
eCampus University - Via Matera, 18 00182 Rome, Italy

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Background

The hydrogeological risk has recently increased globally, causing thousands of deaths and affecting millions of people annually: these statistics may double by 2030. Assessing hydrogeological risk quickly and accurately is a top priority. But the suddenness and severity of recent climate events make it hard to perform quick and precise risk assessments due to a lack of time/data. This project proposes a tool that uses Trustworthy Artificial Intelligence (TAI) to assess hydrogeological risk (i.e. landslide and flooding risks) and generate guidelines on risk management planning and increasing risk awareness, even if hydrogeologic/demographic data is incomplete. The tool uses a Knowledge Base (KB) consisting of representative sets of Reference Areas and Reference Climate Events (RCEs). Each Reference Area has elements (slopes, rivers, people) described by hydrogeological and demographic data, whereas meteorological data characterize each Reference Climate Event. In the Knowledge Base data, each element of a Reference Area subject to a Reference Climate Event is associated with a Hydrogeological Risk level and Reference Guidelines on risk management planning and increasing risk awareness based on geotechnical, hydraulic, and psychological analyses. The tool uses Trustworthy Artificial Intelligence to estimate the Hydrogeological Risk levels of the elements of an existing area with reference to a climate event by looking for the Reference Areas/Reference Climate Events most similar to the area/climate event, then inferring tailored guidelines from the Reference Guidelines. Tailored guidelines help experts find the best actions to reduce the risk of the elements (slopes and rivers) and implement personalized guidelines to raise awareness of the risk, prioritizing vulnerable groups and people with disabilities. Trustworthy Artificial Intelligence makes the tool unique as it explains how it comes to results, making its reasoning understandable and reliable. Experts can work alongside the tool to select the best mitigation plans and insert new Reference Areas/Reference Climate Events into the Knowledge Base data, thereby obtaining a lifelong learning tool. The project involves Croatia, Italy, and Montenegro, which will collaborate and provide data regarding the areas where the pilot studies will occur.

The SAFE-LAND project is coordinated by **UNIVERSITÀ TELEMATICA E-CAMPUS** (Italy) and the project partnership is composed of the **UNIVERSITÀ DI PISA** (Italy), **MEDJIMURJE COUNTY** (Croatia), and **MINISTARSTVO UNUTRASNJIH POSLOVA** (Montenegro). The project will last 2 years, for a total budget of € 1.150.357,15 with an EU contribution of € 976.500,00.

Target Groups

The event is best suited to international, national, and local actors responsible for implementing and planning prevention and risk plans; international, national, and local institutions representing civil society, educational institutions, intermediate bodies, associations, and NGOs.