Grant Agreement No. 783169
U-Geohaz – "Geohazard impact
assessment for urban areas"

Deliverable D4.2: Rockfalls tools and methods user assessment procedure

A deliverable of WP 4 (Activity 4.2): User assessment

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Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the Consortium (including the Commission Services)	
CO	Confidential, only for members of the Consortium (including the Commission Services)	
TN	Technical Note, not a deliverable, only internal for members of the Consortium	

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EXECUTIVE SUMMARY

This document, which represents the second deliverable of WP4 "Tools and methods to support Early Warning System for Rockfalls", describes the actions performed in the Activity 4.2 "User assessment".

The main goal of this task is the assessment of the project progress and of the results from the User perspective. It will be based on the SAFETY assessment procedure tailored to the specific characteristics of the U-Geohaz products, being applied in two phases: first, during the product generation by providing a continuous feedback to identify the gaps between the user requirements and the delivered products. Then a final assessment of the products by taking into account the validation results and the feedback provided by the involved CPAs. The main outcome of the user assessment activity will be fundamental for the integration of the U-Geohaz products in the CP prevention procedures. A critical evaluation of the developed tools, methods and generated results to support Early Warning System for Rockfalls will be performed, including feedbacks and indications for possible improvements of to increase urban resilience.

REFERENCE DOCUMENTS

N°	Title
RD1	DoW Part B

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1   INTRODUCTION

This document describes the assessment procedure for U-Geohaz. The main goal of the procedure is evaluating the WP4 developed products during its development.

The assessment of the WP4 project products is performed with the gap analysis procedure. The gap analysis allows identifying the gaps between the developed products and the user requirements. It is applied along the project in order to detect and fill the gaps between user requirements and developed products.

The main reasons to use this procedure in U-Geohaz are two: first, the experience achieved by the consortium in previous projects (LAMPRE, DORIS and SAFETY)[1] where it has been applied successfully and; the simplicity of the procedure which allows an easy communication between the scientists and the projects final users, mainly composed by CPA's.

The document is structured in two main section. In the first section are listed the products to be assessed together with the user requirements. In the second section is briefly described the procedure used for the assessment: the gap analysis.

2   THE PRODUCTS OF WP4

The U-Geohaz project is designed to set up useful products for Civil Protection user community at EU level (operating at different administrative and organizational levels, from local to continental).

The main goal of WP4 is to tailor tools and methods to generate information to support early warning systems for rockfalls. Information and methods will be implemented starting from the results of other European projects (i.e., LAMPRE and SAFETY). The first task has been the identification and evaluation of user needs. The next steps will improve: i) the capability to recognize rockfall source areas, and ii) the definition of empirical rainfall thresholds for the possible initiation of rockfalls. The main effort has been to define a list of realistic user needs for WP4 products, to make them suitable to be integrated also in different national contexts.

The products delivered in the framework of the WP4 are:

- Rockfall Information System (RIS)
- Map of the rockfall source areas (RSA)
- Rockfall modelling map (ROM)
- Empirical rainfall thresholds for rockfall events

The products are briefly described in the tables below.

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[1] LAMPRE, LAndslide Modelling and tools for vulnerability assessment Preparedness and REcovery management, FP7 Grant 312384, http://www.lampre-project.eu/
DORIS, Ground Deformations Risk Scenarios: an Advanced Assessment Service, FP7 Grant 242212, http://www.doris-project.eu/
SAFETY, Sentinel-1 for geohazard prevention and forecasting, ECHO/SUB/2015/718679/Prev02, http://safety.cttc.es/

Activity 4.3 Rockfall Information System "RIS"			
Short Description	**Product**	**ID Requirement**	**User Requirements**
Rockfall Information System "RIS" to enable the periodic assessment of rockfall hazard, will be designed to collect and update the necessary input information.	Rockfall Information System (RIS)	WP4_4.3.2_1	U-Geohaz will provide a description of the collected data.
		WP4_4.3.2_2	U-Geohaz provides RIS in Database Format.
		WP4_4.3.2_3	U-Geohaz provides evaluations of the quality and uncertainty of the data included in RIS. It can be included in the database or specified in the deliverable.

Activity 4.4 Enhanced rockfall modelling and zonation in the Canary Island			
Short Description	**Product**	**ID Requirement**	**User Requirements**
Mapping the locations of rockfall source areas using a statistical approach will be performed. Then, a rockfall modelling map will be carried out using deterministic approaches starting from the probabilistic recognition of source areas.	Source area map (RSA)	WP4_4.4.2_4	U-Geohaz provides RSA in raster format. This product will be Inspire-compliant.
		WP4_4.4.2_5	U-Geohaz provides a description of the procedure/method used to identify RSA.
		WP4_4.4.2_6	U-Geohaz provides evaluations of the quality and uncertainty of the RSA.
		WP4_4.4.2_7	U-Geohaz provides RSA at the scale and resolution of the DEM available in the study area. The DEM resolution should range between 5 and 20 meters.
	Rockfall modelling map (ROM)	WP4_4.4.3_8	U-Geohaz provides ROM in raster format. This product will be Inspire-compliant.
		WP4_4.4.3_9	U-Geohaz provides a description of the procedure/method used to prepare ROM.
		WP4_4.4.3_10	U-Geohaz provides ROM scenarios.
		WP4_4.4.3_11	U-Geohaz provides ROM at the scale and resolution of the DEM available in the study area. The DEM resolution should range between 5 and 20 meters.
		WP4_4.4.3_12	U-Geohaz provides ROM in a specific layout ready to be printer for field activities. The layout should contain a brief description of the product.

Activity 4.5 Rainfall thresholds for the possible initiation of rockfalls			
Short Description	**Product**	**ID Requirement**	**User Requirements**
Empirical rainfall thresholds for the possible initiation of rockfalls will be evaluated.	Empirical rainfall thresholds	WP4_4.5.2_13	U-Geohaz will provide cumulated event rainfall-duration (ED) thresholds for different exceedance probabilities.
		WP4_4.5.1_14	U-Geohaz will provide a description of the used data source.
		WP4_4.5.2_15	U-Geohaz will provide an evaluation of the uncertainty associated with the threshold parameters.
		WP4_4.5.2_16	U-Geohaz will provide a description of the statistical method used to calculate empirical rainfall thresholds.

3 USER ASSESSMENT PROCEDURE

As commented above in this document, the user assessment procedure will be mainly focused to perform a detailed GAP analysis. Since this procedure was successful during previous projects (Lampre, Doris and Safety), it will be repeated also for U-Geohaz. It was especially useful during collaboration between scientists and potential users, CPAs, as a key and simple strategy to achieve the planned goals of the project. The GAP analysis compares current project performance with desired one and makes possible to develop strategies to "fill the gaps" and to achieve potential aims.

A list of user requirements, associated to the WP products is listed in the tables above (e.g., deliverable D4.1:"Rockfall tools and methods user requirements"). All the requirements are in fact the target of the GAP Analysis.

To monitor the project performance we have defined a strategy summarized in the fields of the following table:

ID Req	Current State	Target State	GAP exists	GAP Resolution	GAP Resolved Date	Comments	Color Scale
code	description	description	YES/NO	description	date	description	colour

Where,

- **ID Req**: code of the requirement as listed in D4.1:"Rockfall tools and methods user requirements".
- **Current state**: implementation status of a specific requirement at the current moment.
- **Target state**: desired status of a specific requirement as listed in D4.1:"Rockfall tools and methods user requirements".
- **GAP exists**: when current and target state are different then Gap exists = YES (otherwise, Gap exists=NO)
- **Gap Resolution**: description of the actions to carry out in order to solve the existing gap
- **Gap Resolved Date**: date when the gap is solved
- **Comments**: additional comments to explain the GAP resolution strategy
- **Colour Scale**: importance of the GAP following the colour scale:
  - RED: gap needs to be closed
  - ORANGE: it is advisable that gap closes.
  - GREEN: gap is closed / nor relevant for the success of the project.
  - GREY: gap to be discussed with project partners.