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The INFRARISK Project

FINAL DISSEMINATION CONFERENCE

29 September 2016 | MADRID, Spain

Report

The final public event of the EU-FP7 funded project INFRARISK – Novel indicators for identifying INFRAstructure at RISK from Natural Hazards – was the Final Dissemination Conference.

The INFRARISK project was due to end at the 30th of September 2016 and the Final Dissemination Conference was organized on the 29th of September in Madrid. During the one-day event new research was presented regarding the development of optimal stress testing techniques for European Critical Infrastructure, which focuses on potential impacts to the European TEN-T (road and rail) network due to natural hazards, such as earthquakes, floods, and landslides.

The conference addressed the main INFRARISK topics on the stress testing framework, the road and rail example case studies, the INFRARISK Decision Support Tool (IDST), and the INFRARISK GIS Knowledge Base. After the results were presented to the 70 participants attending the conference, the final session incorporated a panel discussion moderated by the coordinator of INFRARISK. The five panelists were experts in both industry and academia together with the coordinators of similar EU-projects.

The event was organized in three sessions and started with a short presentation by **M. Segarra** welcoming participants to the INFRARISK Final Dissemination Conference at **DRAGADOS** premises in Madrid.

Session 1

The first session of the Conference was moderated by **M. García-Fernández**, researcher at the partner institution **CSIC**.

The first presentation was delivered by **E. O'Brien (ROD)**, the project coordinator, giving an overview of the project and the objectives of the Final Dissemination Conference.

Following the introductory presentation, **B. Bell – University of Surrey** – shared the view an infrastructure management sees the protection of critical transport infrastructures from natural hazard events. After presenting a general framework of the problem, he stressed the most important points in his view that would be most critical in dealing with the risk of natural hazards on transport infrastructure.



E. O'Brien on Overview of the project and objectives of the Conference



B. Bell on a network management perspective

Session 2

Session 2 of the conference was moderated by **M. Segarra (DRAGADOS)** and was aimed at presenting the results of the project. It included the presentations of INFRARISK partners on the main methodologies and outputs of the project.

A first talk by **B. Adey (ETHZ)** and **P. van Gelder (PSCT)** presented the approach to risk assessment and the INFRARISK stress testing framework as developed in the project. The process to assess infrastructure related risks due to natural hazards with stress tests which is applicable independent of the hazard to be considered, the infrastructure objects to be taken into account and the types of consequences to be considered. The general stress test framework is described as such in which stress tests are just a special instance of a risk assessment, where instead of marginalizing over all the possible stress scenarios one specific stress scenario is chosen instead for which to gauge its potential effects.

D. D'Ayala (UCL) and **M. García-Fernández (CSIC)** delivered a presentation in which the different objectives and challenges on the hazard identification related to earthquakes, flooding, and landslides and the assessment of asset vulnerability. The approach to seismic hazard assessment for low probability seismic inputs affecting critical transport infrastructures was described together with the methodology for assessing single and multi-

risk expected vulnerability of elements in the infrastructure and the path from asset damage to the assessment of network damage.



B. Adey & P.van Gelder reporting on the INFRARISK stress testing framework and risk assessment methodology



D. D'Ayala & M. García-Fernández

J. Clarke & R. Corbally

Next, **J. Clarke (ROD)** and **R. Corbally (ROD)** reported on the INFRARISK Case Study: TEN-T Road and Rail networks (Italy and Croatia). For the Italian case study (a road network located in the province of Bologna), the impacts of seismic hazard scenarios and the landslide cascading hazard effects were shown and the consequences on the network repair costs and the travel disruption to network users were described. The impacts of flood hazard

scenarios on a national rail network in Croatia as evaluated through a qualitative risk assessment (ORT method) to demonstrate the use of such a methodology to determine the rail sections along the network where the risk is most substantial. A quantitative risk assessment was subsequently demonstrated for the network whereby the network vulnerability was assessed according to the potential for bridge scour, track inundation and track blockages due to rainfall-triggered landslides.

The session 2 round of presentations was closed by **Z. Sabeur (IT innovation) & D. Roman (SINTEF)**. They both showed the development of two INFRARISK software tools: the INFRARISK Decision Support Tool (IDST) and the INFRARISK GIS Knowledge Base (KB). The IDST is an advanced information system that enables civil engineers, infrastructure maintenance agencies and crisis managers to assess the potential risks due to natural hazards (earthquakes and floods and their cascading landslide effects). The KB allows users to upload, transform and query data relating to infrastructure components and natural disaster events.



D. Roman & Z. Sabeur



INFRARISK IDST portal

Session 3

The closing session of the Conference was a panel discussion which had two parts. In the first part each of the panelists delivered a short introduction. The five panelists were experts in both industry and academia and coordinators of similar EU-projects. The discussion was moderated by **E. O'Brien** (coordinator of INFRARISK). Five panelists were invited; **P. Petiet (EU-project INTACT)**, **A. O'Connor (EU-project RAIN)**, **J. Lóbez (Crisis Management, Ministry of Transport and Public Works, Spain)**, **J. Rodríguez (PTEC-Spanish Construction Technology Platform, Spain)**, **A. Ansal (EAEE-European Association of Earthquake Engineering)**. All of them are experts in industry or academia, and two of them are coordinating similar EU-projects which made a



Panel discussion: P. Petiet short introduction to EU-project INTACT



Panel discussion: J. Lóbez short introduction on Crisis management system in Spain



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well-balanced panel in relation to the INFRARISK project and the Final Dissemination Conference.

Following the introductions, the second part of the session included the discussion which was opened to the audience by the moderator. There was a lively discussion regarding what were considered key aspects such as how to take up advances to mitigate destruction or loss of infrastructures and how to make understandable the fact that higher first costs makes lower whole life costs. The weight to be put on sustainability as compared to that on resilience. Attention should be paid to resilience since most infrastructures are over used and overstressed and high consequences can be expected if the smallest distraction from steady state would happen.

Another key issue was considered to be the collection of data. Collecting the necessary data was recognized as a huge challenge because very little data from infrastructures if any would be is delivered publicly. End-users should be encouraged to get involved and to use the results and outcomes of these kind of projects. Although it was felt that some kind of standardization of the techniques developed in similar EU projects funded in FP7 (INTACT, INFRARISK, STRESS, RAIN) dealing with the effects of Natural Hazards on European Critical Infrastructure might be needed.