RESTATE Project: Real-time decision support system for safety assessment of large concrete dams. The action cycle: Data-Information-Knowledge-Decision Making

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To show how quality control of data, statistics, Machine Learning, and Artificial Intelligence will change Infrastructure Safety and Risk Management and Public Safety Forever is expected with the RESTATE project. This work aims to develop methodologies and procedures to support decision-making for the timely safety control of large infrastructures under operating conditions. This project aims to address new methodologies based on Deep Learning to create value in three main activities: quality control of monitoring data, analysis and interpretation of the structural behaviour, and safety assessment.

The validation of all methodologies will be tested based on real data obtained from monitoring systems of large infrastructures. Through the development of methodologies and procedures to support decision-making in the context of real-time safety control of large infrastructures are proposed, being concrete dams the main focus of this project. These methodologies will contribute to enhance: i) the quality control of the different measurements (Activity 1); ii) the analysis and interpretation of the structural behaviour, namely through short-term analysis and prediction (Activity 2), and iii) the safety assessment of the infrastructures (Activity 3). In practice, all the proposed methodologies and procedures will be implemented and tested with decision support tools developed in the gestBarragens system (Activity 4), that will be able to provide data and generate decision support information for the multiple decision makers involved in the structural safety control.