Future perspectives of standardisation for a safe European transport infrastructure

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Abstract

Aiming to ensure the safety of the transport infrastructure during operation through the improvement of maintenance policies across Europe, the European Commission opened in 2019 the call for the Coordination and Support Action (CSA) "Monitoring and safety of transport infrastructure". The main goal of this CSA is to support the preparation of a mandate for a CEN standard for the maintenance and control of the European transport infrastructure. In 2020, the CSA was granted to the IM-SAFE project consortium. Based on the analysis of standardisation needs, good practice and available knowledge and technology, the future perspectives of standardisation for the use of monitoring, inspection and testing in managing the safety risks to transport infrastructure has been studied.

This contribution presents the scope proposed by the IM-SAFE project for future harmonised European standards in the domain of monitoring, data-informed safety assessment and condition-based and risk-based predictive maintenance policies for bridges and tunnels, considering the integration of digital innovations as enabling technology.

Keywords: standardisation, bridges, tunnels, monitoring, data-informed safety assessment, maintenance.

1 Introduction

Road and railway infrastructure networks form the backbone of European transportation systems, carrying more than 80% of passenger and 50% of goods transport in Europe. Malfunction and non-availability of these infrastructure assets has huge negative impacts and long-term drawbacks on the economy and society. A variety of hazards, such as deterioration, aging, increasing trends of the loads in the past decades, insufficient inspections , inadequate maintenance, climate change and man-made related hazards lead to high risks to the safe use of bridges and tunnels. This is an urgent issue both European and global, as shown by the nearly 30 major failures of road and railway bridges and tunnels in Europe in the last two decades with the collapse of the Morandi Bridge in Genoa as the most recent disruptive event.

This contribution presents the scope proposed by the IM-SAFE project [1] for future European standards for monitoring, data-informed safety assessment and condition-based and risk-based predictive maintenance policies for concrete bridges and tunnels, considering the integration of digital innovations as enabling technology. The IM-SAFE project envisions a paradigm shift from