Title	Bridge Evaluation for Railway Enhancement through smart MOnitoring TEchnologies
Acronym	BE - REMOTE
Duration	2024-2025
Responsabile	Salvatore Strano (partecipante)
Partner	Università degli Studi di Napoli Federico II, Ferrovie Nord Milano, Politecnico di Milano
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Abstract

Bridges and viaducts, key elements of land infrastructure, are increasingly at risk due to ageing, traffic loads, and climate change. This situation threatens civil safety and socio-economic development worldwide, thus requiring a paradigm shift with respect to visual inspections, today's main technique for assessing the structural health of bridges.

Monitoring through sensors represents a potential solution, enabling the transition to predictive maintenance. This project tests this practice in the railway field, applying it to a pilot bridge. It investigates several innovative aspects, such as the construction of digital twins of the train and the bridge to simulate their interaction, the use of IoT sensors, comparing them with a traditional wired solution, and the use of AI algorithms for anomaly detection. The ultimate goal is to test a fully operational IoT monitoring system, able to autonomously identify damage onset and signal potential structural or train runability issues.