

Expected outcomes

ROBUSTNESS

- Reduce infrastructure collapse direct and indirect costs in €3 billion/year adopting measures that improve the adaptation to extreme weather events and climate change.
- Achieve 15% savings in maintenance costs improving the structural health monitoring.
- Minimize 30% budget deviation in performance within 10 years from project mid-term, thanks to proper R&D in ageing infrastructure assets.

RESOURCEFULNESS

- Collect real time data from more than 5000 billion passenger-kilometres of European inland transport users thanks to human sensing and car connectivity techniques.
- Decrease 50% action time-response in case of emergency as a result of accurate prediction and human sensing.

RAPID RECOVERY

- Repair time reduction of 25-35% after a hazard occurs.

REDUNDANCY

- Increase 20-30% the mobility effectiveness of users in case of congestion or failures of main route through backup alternatives enabling instant route optimisation.

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GIS-based infrastructure management system for optimized response to extreme events on terrestrial transport networks



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Introduction

The modern society is increasingly dependent on transportation networks for its daily activities. The ability of the transport network to function during adverse conditions and quickly recover after an extreme event is fundamental to the wellbeing of people within society. The current increased focus on resilience is driven by a raised awareness of extreme events due to natural hazards such as heat and cold waves, river and coastal floods, droughts, wildfires or windstorms, where climate change also affects the severity and frequency of these events; and man-made events such as accidents, man-made fires and terrorism.

For this reason, the SAFEWAY project has received funding from the European Union's Horizon 2020 research and innovation programme, as its main aim is to design, validate, and implement methods and tools to significantly increase the resilience of inland transport infrastructure by reducing risk vulnerability and strengthening network systems to extreme events. SAFEWAY's objectives will address and strengthen the four criteria for a resilient infrastructure: robustness, resourcefulness, rapid recovery and redundancy. SAFEWAY project duration is 42 months, and its work plan is divided into 11 Work Packages, carried out by 15 partners from 8 countries, that include knowledge generation, technology development activities, prototyping and use-cases testing.

Pilots

Pilot 1: Portugal

The Atlantic Corridor showed an intense expansion of its rail and motorway infrastructures on the Iberian Peninsula. It is particularly susceptible to wildfire, human-induced fire and floods. The Pilot is managed by Infraestruturas de Portugal and includes two demonstration sites with multimodal transportation: Santarém (311 km of road, 92 km of rail), and Leiria (121 km of road, 40 km of rail).

Pilot 2: Spain

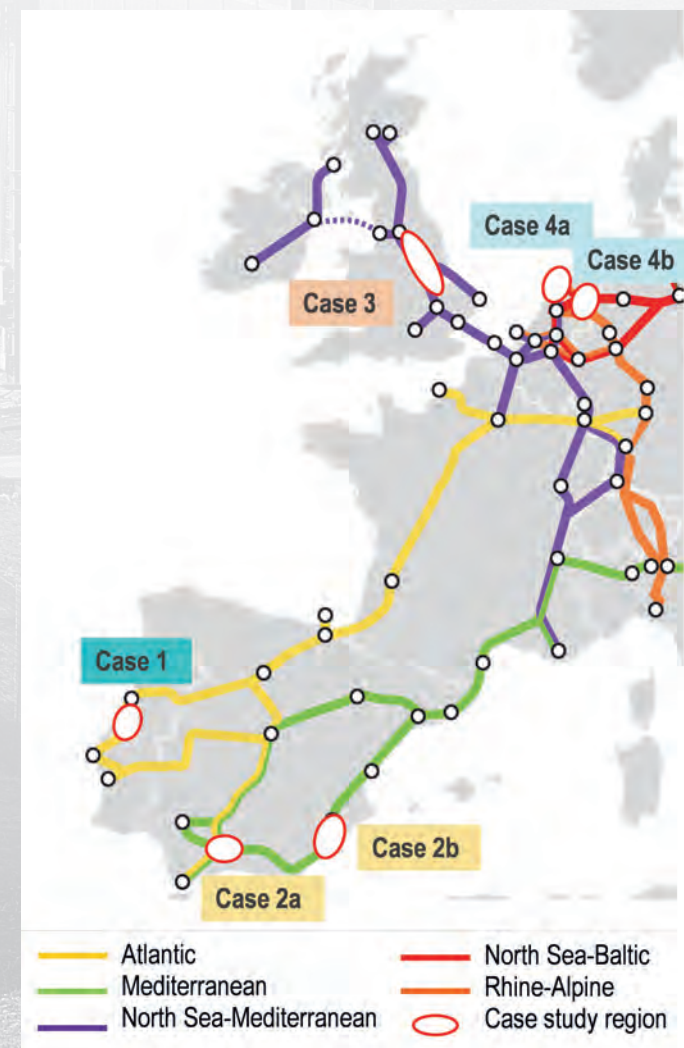
The Mediterranean Corridor has been selected as example for its moderate seismic risk, floods and extreme temperatures that have an influence on high speed and conventional rail network management. This Pilot is managed by Ferrovial, and includes two demonstration sites with railway transportation: Málaga (high-speed railway) and Murcia (conventional railway).

Pilot 3: United Kingdom

The North Sea – Mediterranean Corridor, in the area between Manchester and London, is constantly at significant risk of floods and embankment failures, and it is the busiest train line in the UK. This Pilot is managed by Network Rail, and includes one demonstration site with railway transportation: Stoke-on-Trent (16 km of railway).

Pilot 4: The Netherlands

This Pilot is managed by BeTR and Innovactory, and includes one demonstration site with a 70-km long test track highway for self-driving cars, between Helmond and Tilburg. It is employed to validate the performance of crowdsourcing and real time solutions of SAFEWAY.



SAFEWAY Case Studies on TEN-T CORE NETWORK CORRIDORS