XCROSS

The next generation of railway crossing asset management technology

Europe's Rail

Co-funded by the European Union

Challenge

Railway crossings often wear out faster than their expected lifespan, leading to high costs for repairs, replacements, and delays. This creates a financial burden for railway operators, highlighting the need for better maintenance strategies.

Objectives

The XCROSS project seeks to transform the monitoring, inspection and maintenance of crossing surface profiles through a suite of innovative technologies. Key objectives include:

- Using 3D laser scanning and computer vision for fast, precise crossing inspection
- Developing digital twins with advanced algorithms to optimize maintenance planning
- Creating Augmented Reality and 3D printed tools to improve on-site maintenance interventions.

These innovations are designed to help maintenance teams track progress during welding and grinding operations. An early warning system will also detect early signs of degradation, enabling timely interventions. The goal is to optimize the lifecycle of railway crossings and reduce maintenance costs.

Impact

- Improved lifecycle costs
- Improved lifespans
- Improved wheel load distribution
- Reduced inspection time
- Realisation of new maintenance regimes

Project organisation

WORK PACKAGE #	WORK PACKAGE TITLE	WORK PACKAGE LEADER
WP1	Project Management	TU Delft
WP2	State of the art and technical specification	TU Dresden
WP3	3D laser scanning	University of Leeds
WP4	Advanced digital twins	TU Delft
WP5	Development of 3D printed profile visualisation tools	AIMEN
WP6	Augmented reality profile visualisation tools	TXT E-TECH
WP7	Crossing monitoring system	Evopro Innovation KFT
WP8	Field demonstrators	TU Dresden
WP9	Appraisal of economics, safety and environment	University of Leeds
WP10	Communication, dissemination, exploitation	Eurnex e.V

Facts and figures

Acronym: **XCROSS**

EU Contributions: **2.04 m€**

Duration: **30 months**

Project start date: **01/10/2024**

Project end date: **31/03/2027**

Partners: **10 partners from 7 countries**

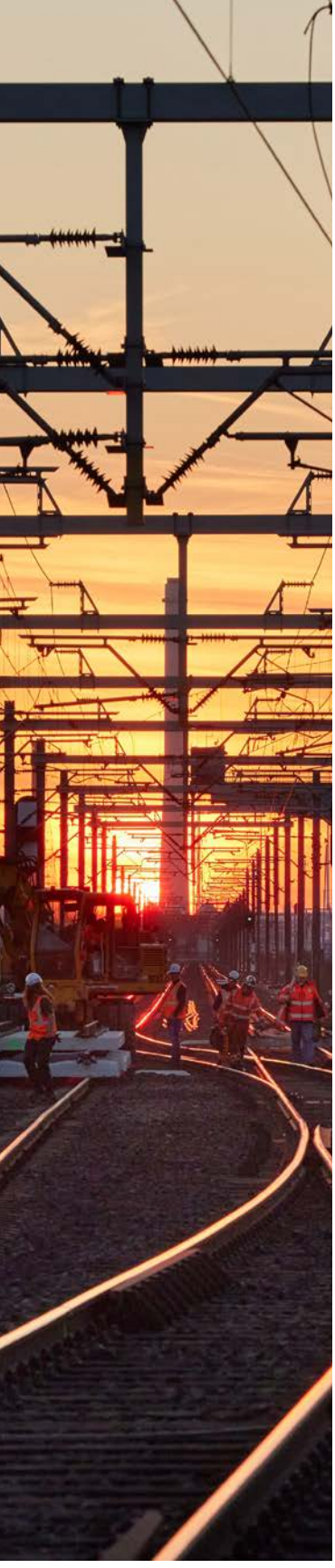
Project coordinator: **TU Delft**

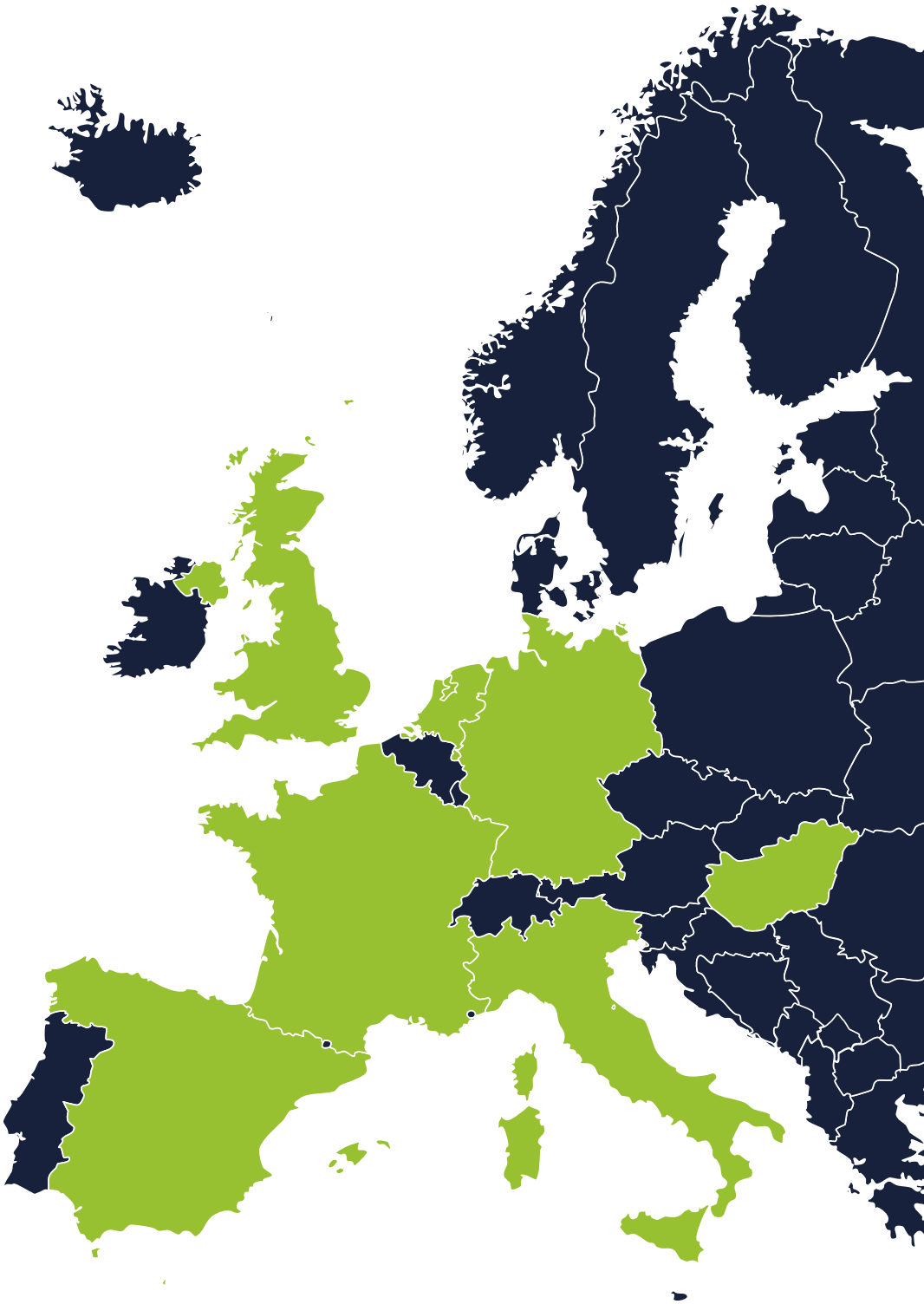
Topic: **HORIZON-ER-JU-2023-EXPLR-04 Type of action: HORIZON JU Research and Innovation Actions**

Grant agreement n° 101178744

More information: https://xcross-rail.eu/.

Logos	Company	Country
	TECHNISCHE UNIVERSITEIT DELFT	Netherlands
	EURNEX e.V	Germany
	EVOPRO INNOVATION KFT	Hungary
	PRORAIL BV	Netherlands
	UNION INTERNATIONALE DES CHEMINS DE FER	France
	ASOCIACION DE INVESTIGACION METALURGICA DEL NOROESTE	Spain
	TECHNISCHE UNIVERSITAET DRESDEN	Germany
	TXT E-TECH SRL	Italy
	ROTTERDAMSE ELEKTRISCHE TRAM NV	Netherlands
	UNIVERSITY OF LEEDS	United Kingdom





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