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Mid-term event

UIC, Paris / Online

February 5, 2026



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Welcome

XCROSS Mid-Term event

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Why This Mid-Term Event?

- Share progress after 18 months (M1–M18)
- Present early concepts and demonstrators (not final!)
- Collect feedback from industry, operators, and research

What is XCROSS?

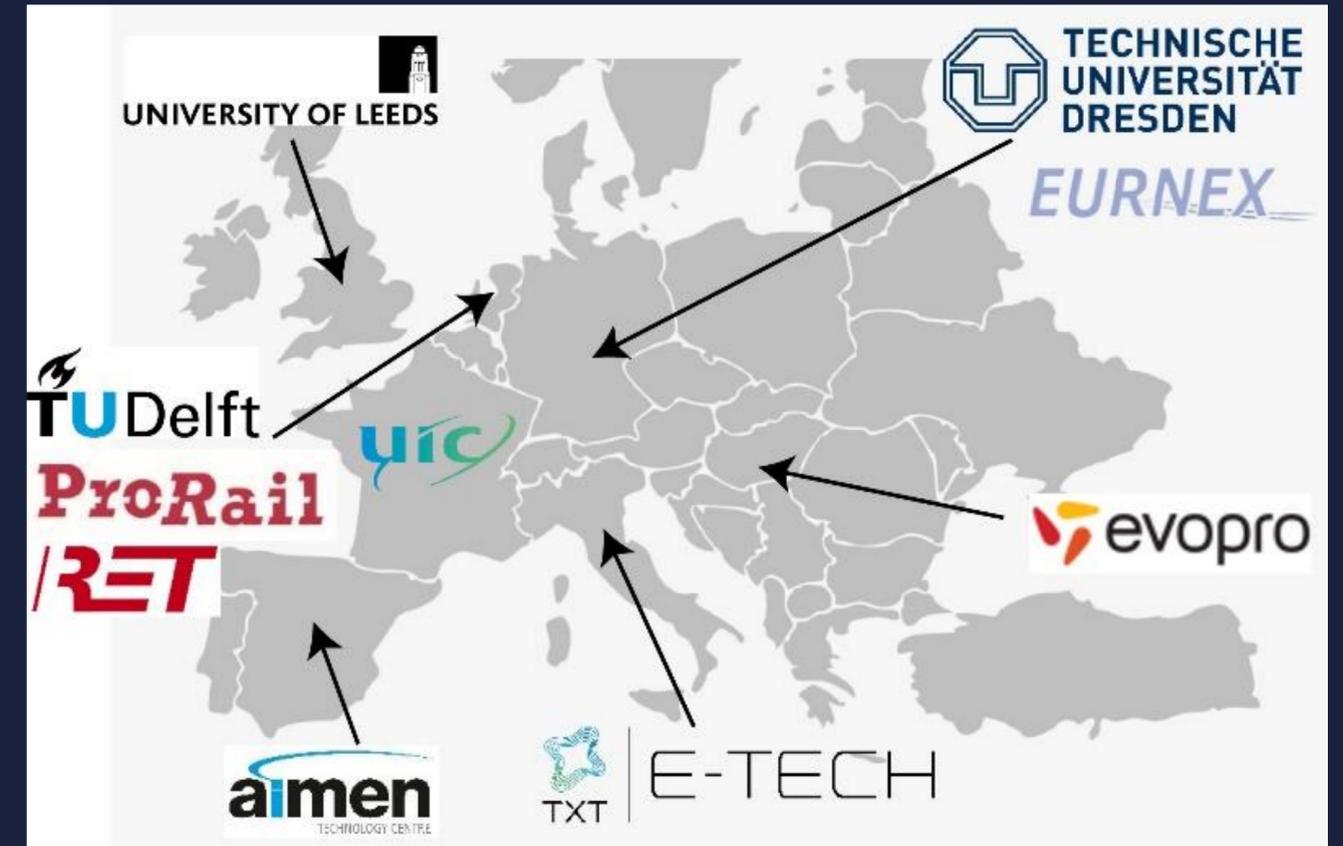
XCROSS develops a next-generation, data-driven asset management process for railway crossings, integrating

- monitoring,
- inspection,
- digital twins and
- intervention support tools.



XCROSS Consortium

- 10 partners, 7 countries
- Universities & research institutes
- Infrastructure managers (ProRail, RET)
- Technology providers
- European rail organisations



Program

- Project overview
- Scientific & technical overview
- WP highlights and demos
- Operator perspectives & discussion



EUROPE'S RAIL XCROSS PROJECT: MID-TERM EVENT – 05 FEBRUARY 2026

The Europe's Rail XCROSS Project partners have the pleasure of inviting you to their mid-term event on 5th February 2026 from 13:00 to 16:00.

Location : [UIC Paris](#) – 16 rue Jean Rey – 75015 PARIS and online

Event schedule:

13:00 – 13:45 – Opening & Project Overview

- 13:00 – 13:10 – Opening
- 13:10 – 13:25 – Project Overview (Goals, concept, challenges, achievements – M1–M18)
- 13:25 – 13:45 Scientific/Technical Overview (Architecture, workflows, innovations)

13:45 – 15:45 – Topic Presentation

Short technical updates + demo contributions + next steps

- Requirements
- Crossing Monitoring System
- Augmented reality tool
- 3D printed Tools
- Socio-Economic & Environmental Impact
- Demonstrator
- Operator (RET/ProRail) testimony

15:45 – 16:00 – Wrap-up and conclusion

16:00 End of mid-term event



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Project Overview

XCROSS Mid-Term event

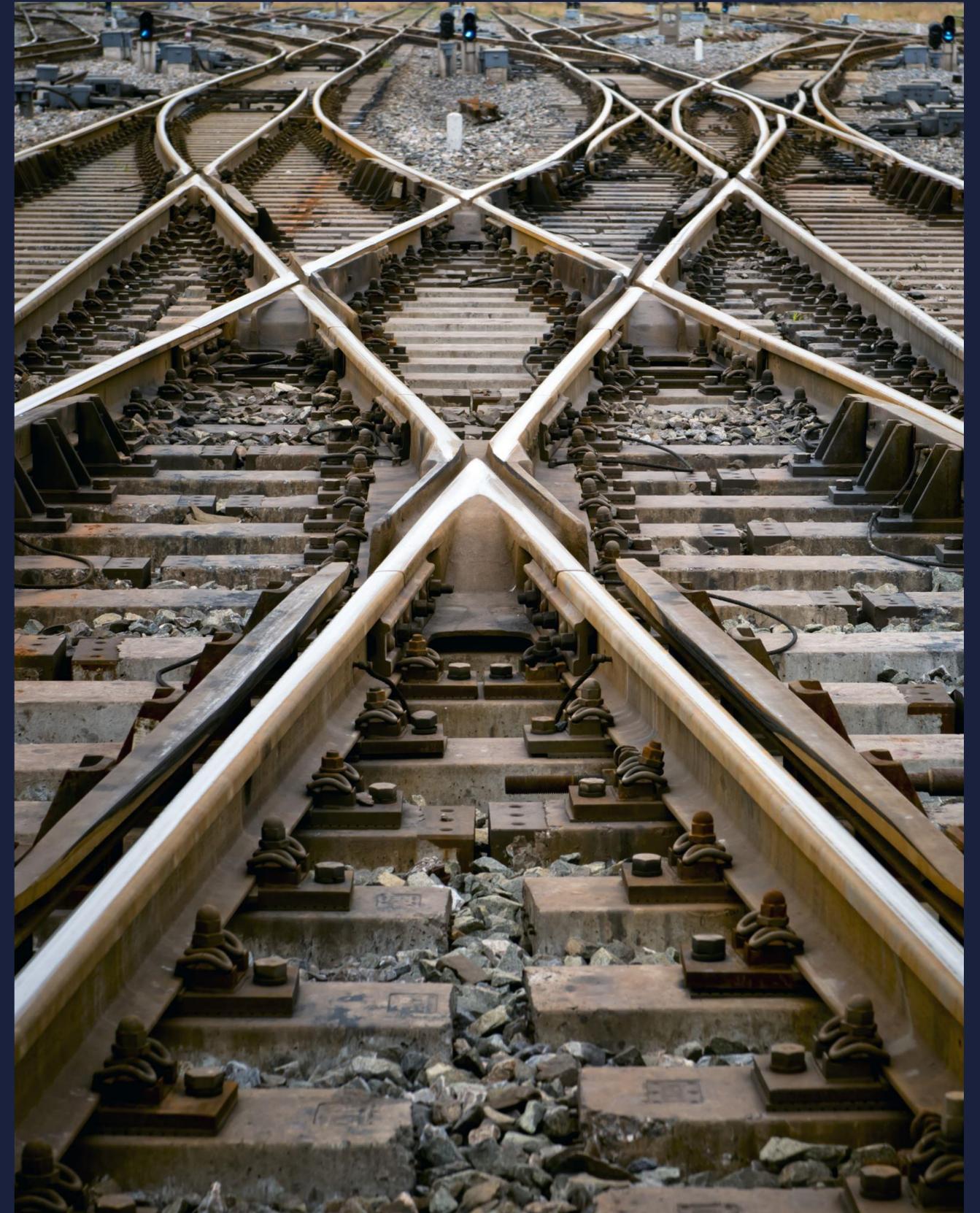
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What is a Railway Crossing?

- Part of a switch & crossing (S&C) system
- Location where the wheel transfers between rails
- Includes crossing nose and wing rails
- Area of highest impact forces and wear

focus on crossing not on switches or actuators



Why Railway Crossings?

- Lifespan often < 5 years vs ~15 years design
- High lifecycle costs and unplanned maintenance
- Significant impact on reliability and delays

Better asset management = Large benefits



Root Causes

- High wheel-rail impact forces at the crossing
- Geometry degradation and self-accelerating wear loop
- Inspection largely visual and reactive
- Manual interventions with quality strongly dependent on maintainer experience

Lack of quantitative, accountable information



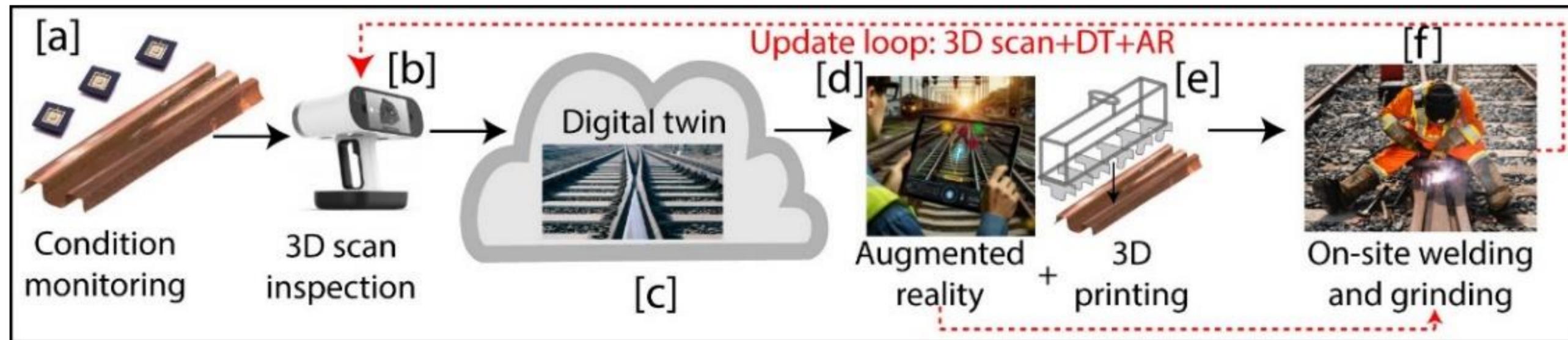
XCROSS Vision

"From reactive, corrective maintenance to data-driven, preventive crossing management"

- Already happened on plain track, less on S&C
- XCROSS: accurate and fast tools
- Includes metro and tram systems

XCROSS End-to-End Concept

Monitoring → Inspection → Digital Twin → AR & 3D Printing → Demonstrators



Intervention: on-site repair involving welding and grinding

What Makes XCROSS Different?

- Explicit focus on supporting on-site contractors
- No robotics - compatible with short possessions
- Augmented reality and physical visualisation as key enabler for measurable intervention
- Explicit inclusion of urban rail (metro & tram) demonstrators

Key Technologies Integrated

- Edge-AI monitoring sensors
- Handheld 3D scanning
- Digital twin with surrogate models
- Augmented Reality guidance
- 3D printed physical templates

This fundamentally changes how repair quality can be assessed in the field,

Who Are the XCROSS Tools For?

- On-site contractors: welders & grinders
- Infrastructure managers: inspection & decision support
- Engineers: planning, validation, and optimisation

Multi-user design is essential for the tools to be used in practice



Progress So Far (M1–M18)

- Operator-driven requirements defined
- First-generation tools and architectures developed
- Initial lab and field validation started (2 workshops)

Focus: tools reliability



Next Phase (M19–M36)

- System integration and validation
- Field demonstrators (intercity, metro, tram)
- Quantified technical & socio-economic impact



Thank you
for your attention

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