

Coordinator

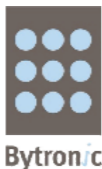


Technical Leader



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Partners



Operated by  Stagcoach



Manchester Metropolitan University



IST



USER INTEREST GROUPS

The project is focussed on Urban Transport and will host User Interest Groups of Mainline Railway Infrastructure Managers and Urban Operators not directly involved in the project. For more information, refer to www.pmnidea.eu.



Developing innovative rail track infrastructure inspection and sensor technologies to improve maintenance activities



Predictive Maintenance employing Non-intrusive Inspection & Data Analysis



Project in a Nutshell

Predictive Maintenance employing Non-intrusive Inspection & Data Analysis (PM'n'IDEA) is a jointly funded research project focussed on developing innovative inspection and sensor technologies for rail track infrastructure. It is a three-year project that began in June 2009 with a budget of around five million Euros.



WP1 Objective Assessment of Visual Integrity

WP2 Objective Assessment of Internal Integrity

WP3 Objective Assessment of Track Quality

WP4 Defining Limits of Structural Integrity

WP5 Assessment of Track Sub-components



Project Objectives

PM 'n' IDEA is focussed on the development of non intrusive track inspection systems to increase track availability, increase life span and reduce life cycle costs of track components, and improve the safety of both workers and users of urban rail systems. The project will utilise and further develop existing innovative technologies to monitor the health status and the rate of degradation of track components to provide visibility of future maintenance and renewal requirements.

Project Structure

The five technical Work Packages (WP) of the project are focussed on the development of innovative products and processes that will enable non-intrusive monitoring of the key track components and thereby permit the implementation of predictive targeted maintenance. The developed innovations will be demonstrated on the networks of participating Infrastructure Managers and assessed critically for their technical, industrial, and economic viability. The dissemination and exploitation of the successful systems will be facilitated through specifically organised meetings of the User Interest Groups of both Urban and Mainline Railway Infrastructure Managers and through presentations at International Conferences.

WP6 Industrial & Economic Assessment

WP7 Dissemination & Exploitation of Results

Key Innovations

Intelligent image acquisition analyses system for track inspections

An image acquisition system mounted on service vehicles will be used to undertake objective inspection of the track infrastructure. An automated analysis of the acquired images can then detect and monitor the degradation of the key track components.

Laser sensors dimensional measuring system with onboard diagnostics

An innovative method, based on laser-sensor dimensional measuring system, will measure and analyse the main components of the track infrastructure with high accuracy.

Assessment of the internal integrity of embedded rails

A transportable measurement and analysis device will enable embedded corroded rails to be identified without dismantling the rail for visual inspection.

Inspection technologies for the assessment of track quality

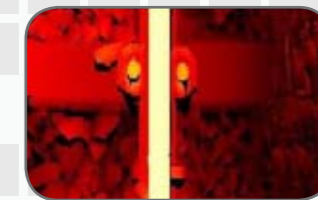
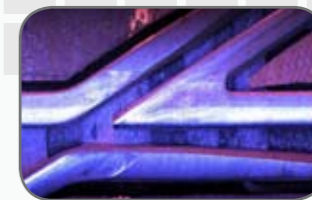
An innovative system will continuously monitoring track quality through measurements taken on service vehicles during standard operations.

Actionable upper boundary limits for the wear of rails

Detailed finite element modelling, monitoring of track forces, and controlled laboratory testing will determine the permissible maximum and actionable wear limits for the most commonly used rail sections.

Automatic assessment of degradation and the integrity of intelligent track components (switch blades, stretcher bars, fish plates and insulated block joints)

Innovative sensors will be deployed in selected key track components to impart intelligence and self monitoring capability to improve safety of operation and enhance component life through predictive timely maintenance interventions.



The Benefits of PM'n'IDEA

- Improved safety of urban transport systems through greater visibility of the condition of key track components enabling timely maintenance interventions.
- Increased life span and reduced life cycle costs of track components through objective monitoring of the rates of degradation.
- Visibility of current asset condition and future budget requirements for maintenance and renewal.

These developments will make tramway and main line operations more reliable and cost effective. As a consequence, road traffic congestion and its impact on the environment will be reduced. For the public, a higher quality and more reliable service will be delivered.