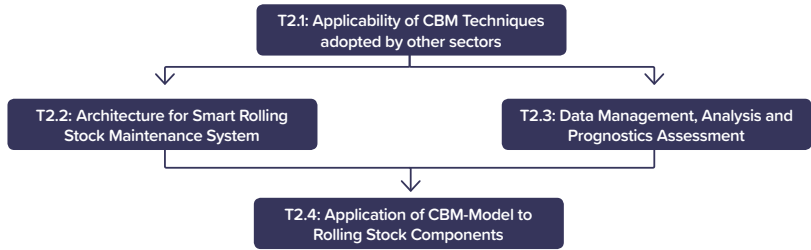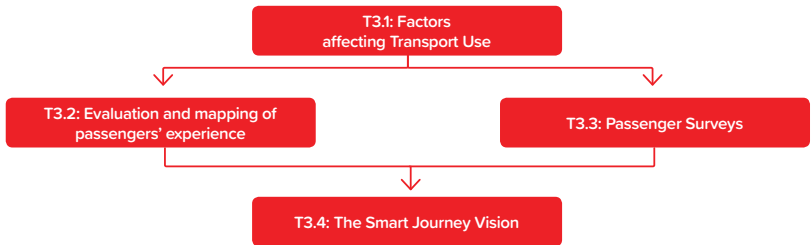## MAIN OBJECTIVES AND OUTCOMES

1. SMART MAINTENANCE

- Review and benchmark of current CBM practices in other sectors, namely the aeronautical sector;
- Development and integration of reliability ontology;
- Development and integration of predictive tools for current and future condition of train passenger components;
- Development of optimization tools to support decision making;
- Application of CBM model to two real-world case studies on train passenger components.

T2.1: Applicability of CBM Techniques adopted by other sectors

T2.2: Architecture for Smart Rolling Stock Maintenance System

T2.3: Data Management, Analysis and Prognostics Assessment

T2.4: Application of CBM-Model to Rolling Stock Components

2. HUMAN FACTORS

- Review of demographical and societal factors affecting transport use, usability and attitudes towards transport.
- Realize an Experience Map project, which considers passengers as individuals behaving in the real context while performing the activities to reach their prefixed objectives.
- Identification of the physical and planning factors and their relative importance in the journey to identify the resistance at each step of the journey, broken down by demographic groups and mode/journey purpose.
- Estimation of attrition factors for each activity in the journey, again by mode/journey purpose and demographic groups, to quantify those potential customers lost at each step of the journey due to unfulfilled usability requirements.
- Integrate the outcomes of the research into a vision and roadmap of measures to simplify the end-user experience of planning and undertaking a trip that includes a rail journey.

T3.1: Factors affecting Transport Use

T3.2: Evaluation and mapping of passengers' experience

T3.3: Passenger Surveys

T3.4: The Smart Journey Vision

PROJECT COORDINATOR

UNIVERSITY OF LEEDS

BENEFICIARIES

ergoproject — Studi ergonomici applicati

fertagus

Moving innovation

University of HUDDERSFIELD

TÉCNICO LISBOA

LULEÅ UNIVERSITY OF TECHNOLOGY

Transport for London

LULEÅ FLYGTEKNIK AB

UITP ADVANCING PUBLIC TRANSPORT

unife — THE EUROPEAN RAIL INDUSTRY

TOTAL PROJECT VALUE

0.7 M€

PARTNERS

11

DURATION

24 MONTHS

CONTACT

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Website
www.smarte-rail.eu

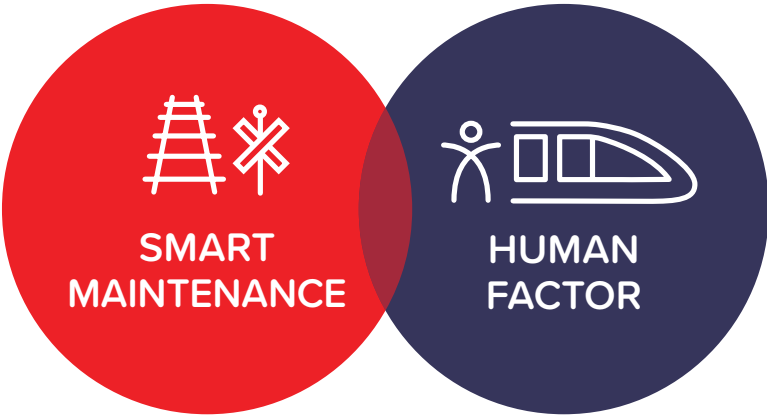## SMART MAINTENANCE AND THE RAIL TRAVELLER EXPERIENCE

INTRODUCTION

SMaRTE (Smart Maintenance and the Rail Traveller Experience) is a Shift2Rail Open Call project within the Horizon2020 Programme of the European Commission.

SMaRTE brings together two related but distinct areas of research. Smart maintenance and human factors are concerned with digitisation and the use of information to enhance decision making, either by industry players in respect of maintenance decisions, or by users of the system in employing smart applications to navigate the rail system and its interaction with other modes.

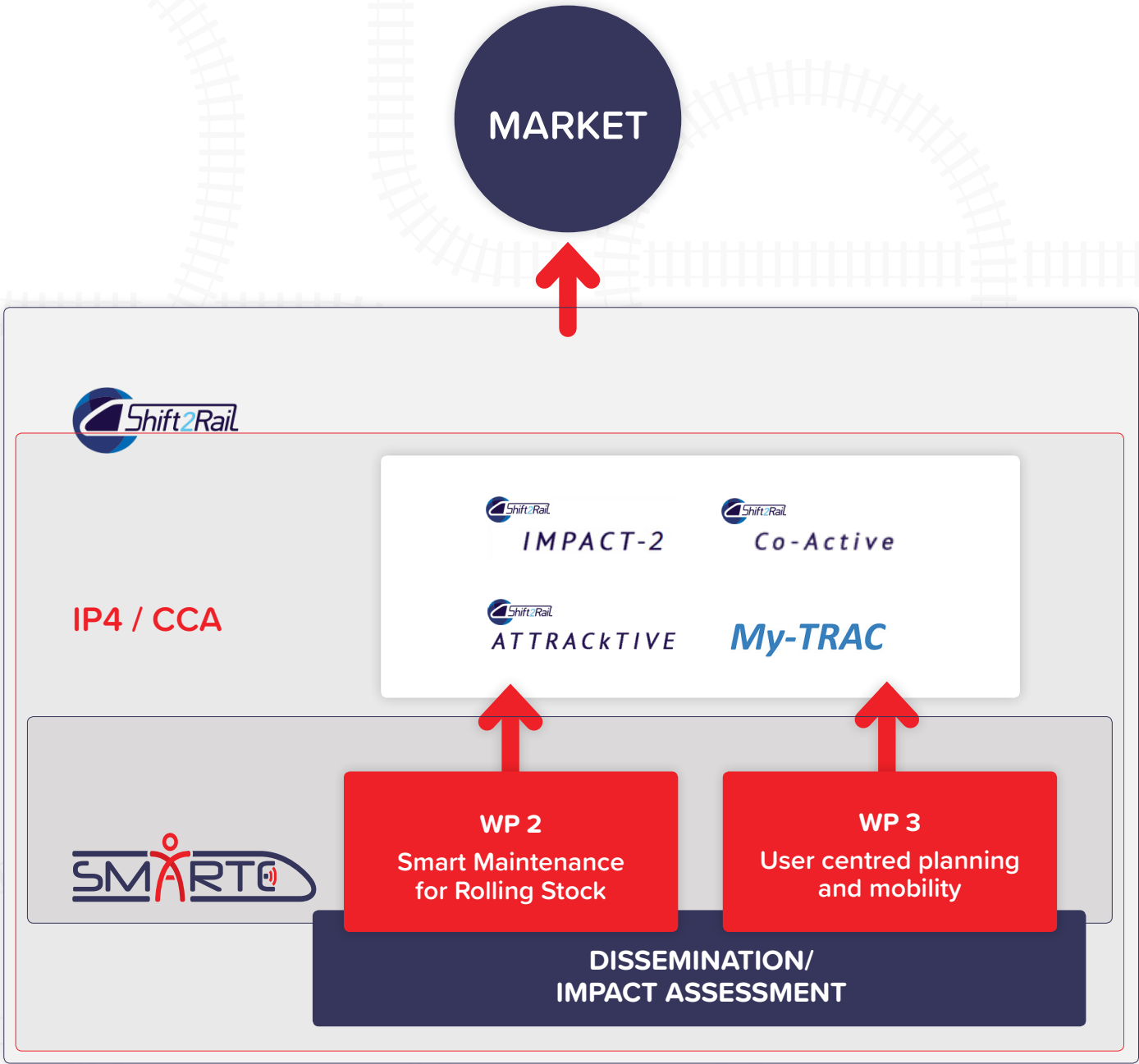**SMaRTE develops across two thematic Work Streams:**

- Smart Maintenance. SMaRTE aims to improve current railway train maintenance systems, through the integration of predictive data analysis algorithms and online optimization tools within an improved Condition Based Maintenance (CBM) strategy,

- Human Factor. The goal here is to understand the current and future needs of passengers from the railway, and other transport systems characterised by rapid advances in technology and demographic change, and consider human centred design in identifying aspects of the customer experience which could be improved and simplified through information and mobility support.

PROJECT IN A NUTSHELL

In the two planned areas, SMaRTE will provide a coordinated set of key contributions including (but not limited to):

- Developing an overall framework for all CBM activities related to the maintenance of passenger trains;

- Developing smart maintenance strategies, for fault prevention (i.e. early detection) and troubleshooting ;

- Developing smart asset Management strategies, for adapting and optimising maintenance activities to diverse clusters of similar assets);

- Managing changes in the railway and other industrial sectors imposed by rapid technological advances impacting on travellers;

- Placing the human rather than technology at the centre of the mobility design process;

- Developing an innovative, multi-disciplinary approach to modelling the behaviour of travellers;

- A clear methodology has been devised for the technical aspects of the work in the project; to ensure the objectives are met SMaRTE will focus on two main technical Work Packages, each focused on one of the two streams highlighted in the call.

MARKET

IP4 / CCA

IMPACT-2   Co-Active

ATTRACkTIVE   *My-TRAC*

WP 2
Smart Maintenance
for Rolling Stock

WP 3
User centred planning
and mobility

**DISSEMINATION/
IMPACT ASSESSMENT**

SMARTE INTERACTION WITH SHIFT2RAIL ENVIRONMENT

SMART MAINTENANCE

HUMAN FACTOR