

# M<sup>ODI</sup> | A LEAP TOWARDS SAE L4 AUTOMATED DRIVING FEATURES



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# MODI

## A leap towards SAE L4 automated driving features

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# About IN-MOVE by Railgrup

IN-MOVE is a **cluster created in 2002** to strengthen the competitiveness of the railway industry

IN-MOVE has become a **benchmark cluster in Transportation and Logistics in Spain**

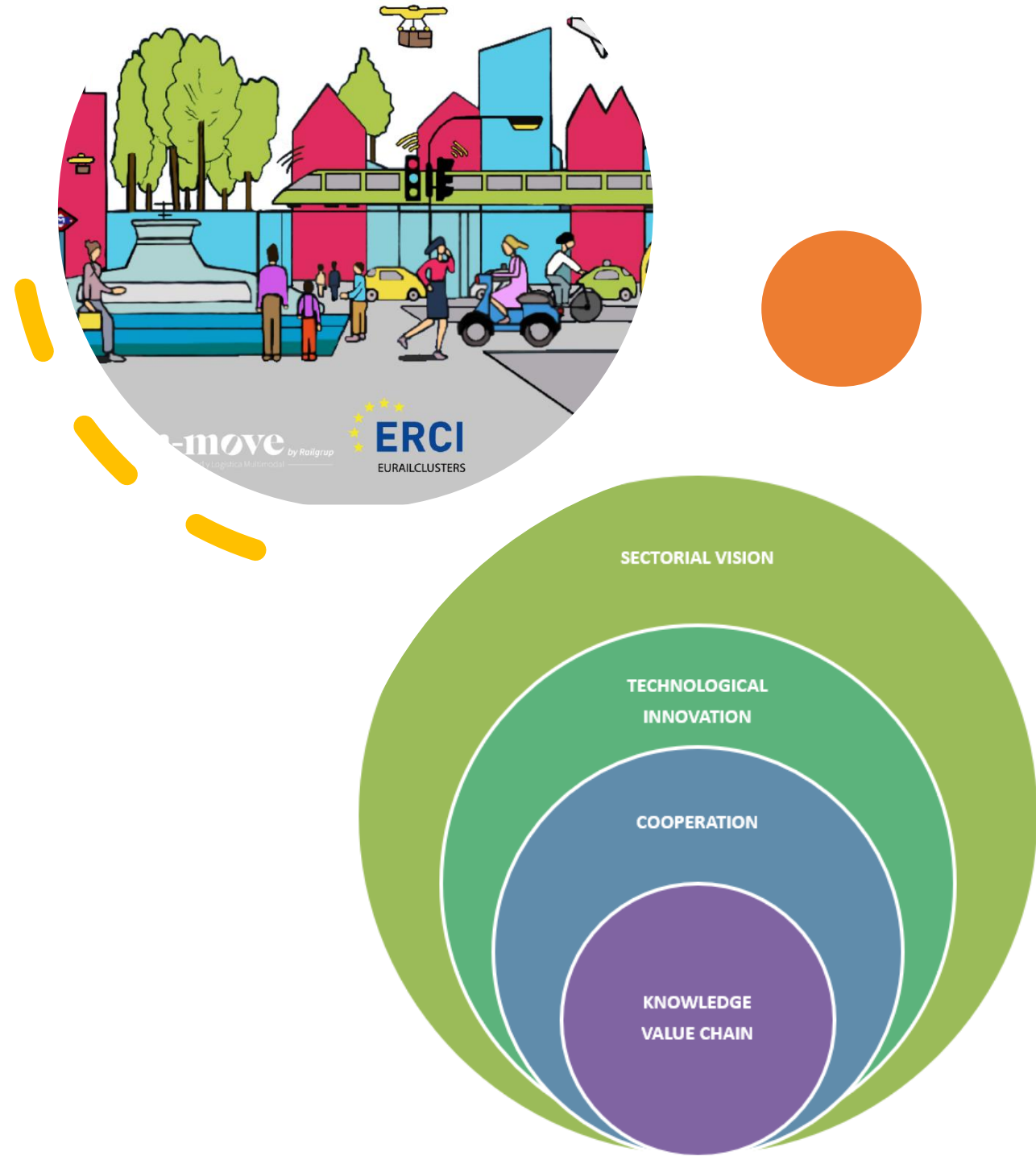
Through **open innovation, technological excellence, cross-sectoral knowledge** and the **development of joint projects**

Access to a **large industrial network** of partners at International level

**+ 126 members** including public and private operators, engineering firms, start-ups, sensor-mobility systems, OEMs, rail infrastructure suppliers and logistics stakeholders

**+20 EU framework programme projects catalyzed** for members

**Founder member of ERCI** (European Railway Cluster Initiative): **15 EU Clusters**, collaborating to enhance the competitiveness of companies and systems. **+ 2000 SMEs in ERCI ecosystem.**





# Modi in a nutshell

## Horizon Europe framework

HORIZON.2.5 - Climate, Energy and Mobility

HORIZON.2.5.7 - Clean, Safe and Accessible Transport and Mobility

HORIZON.2.5.8 - Smart Mobility

HORIZON-CL5-2022-D6-01-01 - European demonstrators for integrated shared automated mobility solutions for people and goods (CCAM Partnership)

## Project information

**MODI:** A leap towards SAE L4 automated driving features

**Coordinator:** ITS Norway

**Partners:** 34 (27 participants + 2 affiliated entities + 5 associated partners)

**Timeline:** 1 October 2022 - 31 March 2026

**Total cost:** € 27,992,880 - **EU contribution:** € 23,030,095

**Funding scheme:** Innovation Action (IA)

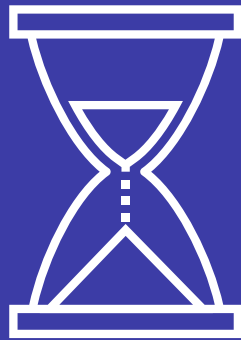




- No net emissions of greenhouse gases by 2050
- Economic growth decoupled from resource use
- No person and no place left behind

- Technology that works for the people
- A fair and competitive digital economy
- An open, democratic and sustainable society

# Automated transport is crucial to overcome freight transport challenges



# Overview

- **Logistic** corridor from Rotterdam to Oslo
- Identify and largely resolve barriers on this corridor, in **confined areas** and on **public roads**

Leveraging with other projects





# The ambition of MODI

## Accelerate the introduction of CCAM solutions to significantly improve logistic chains

- The MODI project aims to **accelerate the adoption of highly automated freight vehicles through demonstrations** and by **overcoming barriers to the rollout of automated transport systems and solutions in logistics**.
- MODI will demonstrate automated heavy-haul vehicles use cases on the **logistics corridor from Rotterdam in the Netherlands to Moss in Norway**, crossing four national borders and demonstrating terminal operations at four different harbours and terminals in route.
- **Automated transport will significantly contribute to improving European transport and logistic chains**. The MODI initiative will contribute to make substantial steps toward identifying and resolving barriers preventing this from coming true.

# Consortium

34 organisations from 8 countries: 27 Participants, 2 Affiliated entities and 5 Associated partners

Industry and end users			
<b>Industrial partners</b> 	<b>Industrial clusters &amp; networks</b> 	<b>Terminals</b> 	<b>Public partners</b> 
Research and evaluation			
Associated partners			



# Objectives

0.1

- **Implement the latest technology and overcome major CCAM deployment barriers for logistics by demonstrating business-oriented and well-integrated CCAM systems for use cases (UCs) along a transport corridor and between hubs.**

0.2

- **Define recommendations for adaptations of supporting infrastructure, vehicle regulations and standards to enable broader deployment of CCAM, speeding up the introduction of CCAM vehicles and recommendations for further (e.g., large scale) piloting.**

0.3

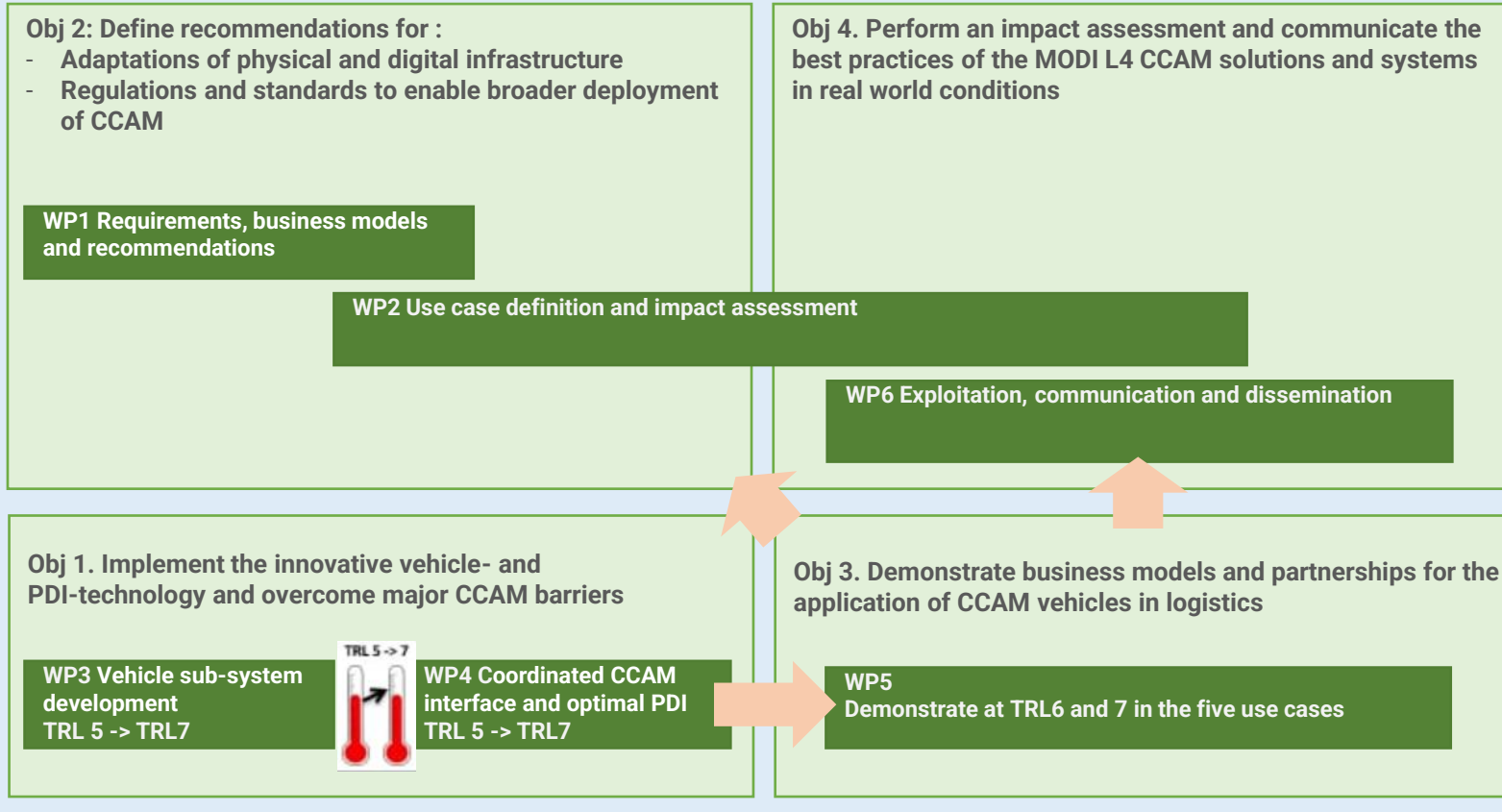
- **Demonstrate business models and partnerships for the application of CCAM vehicles in logistics.**

0.4

- **Perform technical & socio-economic impact assessments and communicate them in the context of the best practices of the MODI L4 CCAM solutions and systems for real-world conditions.**

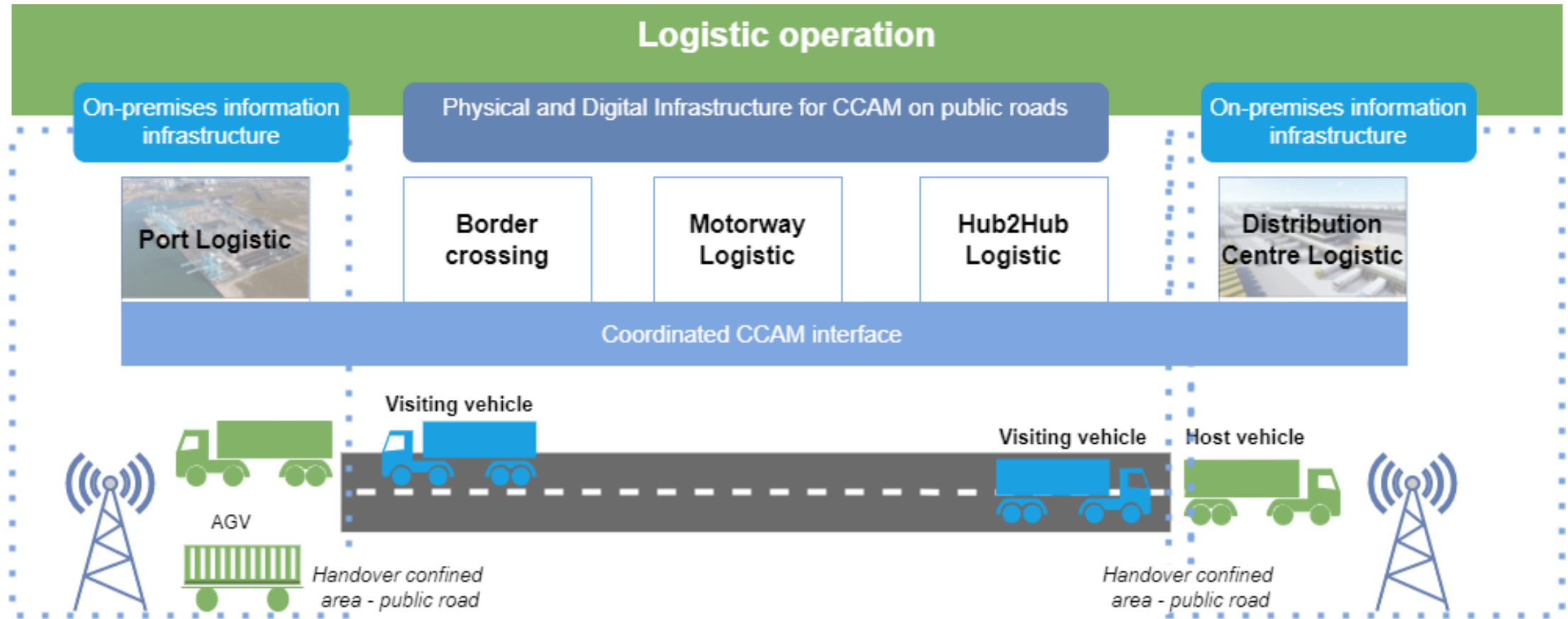
# Methodology

The overall objective of MODI is to speed up the introduction of CCAM vehicles for logistics by demonstrations and overcoming barriers for the roll-out of automated transport systems and solutions in logistics





# Technical concept



# Use cases



## UC1 Port operations

**Netherlands**  
CCAM vehicles on port site

## UC2 Motorway to harbour

**Germany**  
Automated trucks approaching  
a confined area at the harbour  
via city arterial road

## UC3 Hub-to-hub

**Sweden**  
Hub-to-hub with automated  
heavy-duty vehicle



## UC4 Border to port

**Norway**  
Automated vehicles from EU  
border crossing to a port with  
focus on interoperability.

## UC5 MODI CCAM corridor

**MODI CCAM test corridor**  
CCAM cross-border corridor  
from Rotterdam to Oslo



# Key results

## R1. CCAM vehicles

CCAM vehicles at TRL 7 suitable for L4 demonstration on public roads and confined areas on the logistic corridor between The Netherlands and Norway

## R2. Interface for coordinated CCAM

Interface for efficient coordination of vehicles in public and confined areas, adding more benefits to the use of CCAM vehicles.

## R3. Physical and Digital Infrastructure (PDI)

Design of PDI for supporting L4 CCAM vehicles, co-created and verified by relevant stakeholders.

## R4. New business models

New viable business models and tools creating value along the logistic chain by utilizing CCAM technology and vehicles.

## R5. Impact assessment

Assessment of environmental, safety, operational, and socio-economic impacts to support the recommendation of future deployment of CCAM in logistics.

## R6. Book of recommendations

Lessons learned and recommendations on CCAM vehicles, PDI, regulation, harmonization, and standardization to accelerate CCAM adoption in logistics.

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THANK YOU FOR YOUR TIME!



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