



Cámara de Comercio Alemana
para España
Deutsche Handelskammer
für Spanien



MITTELSTAND
GLOBAL
MARKTERSCHLIESSUNGS-
PROGRAMM FÜR KMU

Jornada Hispano-Alemana sobre el Sector Ferroviario – un viaje hacia una movilidad más digital y sostenible

Jueves, 21 de noviembre de 2024, 9:00 – 14:00h

Hotel ILUNION Suites Madrid - C. de López de Hoyos, 143, 28002 Madrid

TRENDS IN RAILWAY MOBILITY AND ASSOCIATED TECHNOLOGIES

in-move *by Railgrup*
Cluster de Movilidad y Logística Multimodal

in-move *by Railgrup*
Cluster de Movilidad Sostenible y Logística Multimodal

Vicent Pastor
Technical Project Office
otp@railgrup.net

IN-MOVE: KEY DIFFERENTIATING FACTS

THE RAILWAY SECTOR AND THE 2030 CLIMATE AND ENERGY GOALS

**THE RAILWAY SECTOR AND EMERGING TRANSVERAL SOLUTIONS:
THE WAY FORWARD**

Founded in 2002
Barcelona, Europe

in-move by Railgrup

Cluster de Movilidad y Logística Multimodal

Formerly known as Railgrup, IN-MOVE was founded in 2002 and is based in Barcelona. It is a Sustainable Mobility and Multimodal Logistics CLuster, with +120 associated companies.

Members include the main OEMs, Public Operators, Private Operators, Engineering, Energy, Consultancy, Railway and Logistics Stakeholders in Spain.



Join IN-MOVE by Railgrup Community and enjoy full access to:

- Selective Networking at Managerial Levels
- Networking Events, Workshops and Techdays
- Specialized Training
- Preferential Access to the Most Important Spanish, European and International Fairs and Congresses in the Railway / Mobility sector
- Up-to-date Market Information and Information about Tenders and EU Projects
- Promotion of Shift2Rail and EU Projects and Access to International Bids
- Open Innovation Scouting
- Access to More than 2.200 Companies within ERCI
- Workgroups on Data Science, Conditioned-Based Maintenance, Smart Mobility,
- Advanced Materials-Technologies, Interiors, Cybersecurity, Eco-Innovation, Multimodal logistics, etc.



- Networking and contacts
- Management of knowledge
- Cooperative projects
- Market trends
- International events
- Innovation Breakfasts
- Access to finance
- Support for start-ups
- Divulgation
- Internationalization
- Specialized training
- Fairs & congress

Contact Information



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company/railgrup

@Railgrup

www.railgrup.net

otp@railgrup.net

MODI

A leap towards driving automation level 4 features

... (text) ...

PODIUM

Accelerating the implementation of CCAM technology

... (text) ...

MODI

... (text) ...

CNN International highlights the benefits of the MODI Project

... (text) ...

European Projects in Connected, Cooperative and Automated Mobility (CCAM)

Galería de Casos de Éxito

8 de mayo 2024
11:00h - 13:00h
Online

Workshop PDI Connectivity and Cooperation for CCAM Solutions

Building the Future of Transportation in Europe

May 2024 2024
10:00 - 12:00
Online

Our Activities

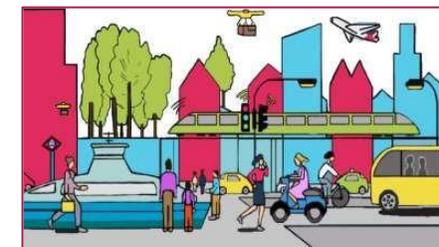


IN-MOVE has become a benchmark cluster not only in the railway ecosystem but in the mobility and logistics sector in general. It helps its members to improve their competitiveness through innovation, technological excellence, cross-sectorial knowledge, and the development of joint projects.

IN-MOVE is a co-founder of the ERCI (European Railway Clusters Initiative) with an outreach of 16 countries and +2,000 businesses, through which it participates in EXXTRA and STARS EU projects.

IN-MOVE is also partner of the large-scale EU project MODI, launched within the Connected, Cooperative and Automated Mobility (2021-2027 Horizon Europe).

Interest in Singapore market: Establish new B2B, B2C and R&D&I cooperation in Mobility, Logistics (CCAM, PDI) and Energy (H2)



Asia Pacific RAIL

Success Stories: The Role of Digital Transformation

29 - 30 May 2024 | Bangkok Thailand

EU Initiatives for Sustainable Transport & Logistics

UTTP BARCELONA 2023 GLOBAL PUBLIC TRANSPORT SUMMIT

INTEGRATING AUTOMATION SYSTEMS

9-11 abril 2024 | Pira de Barcelona

Cluster Management Excellence

BRONZE

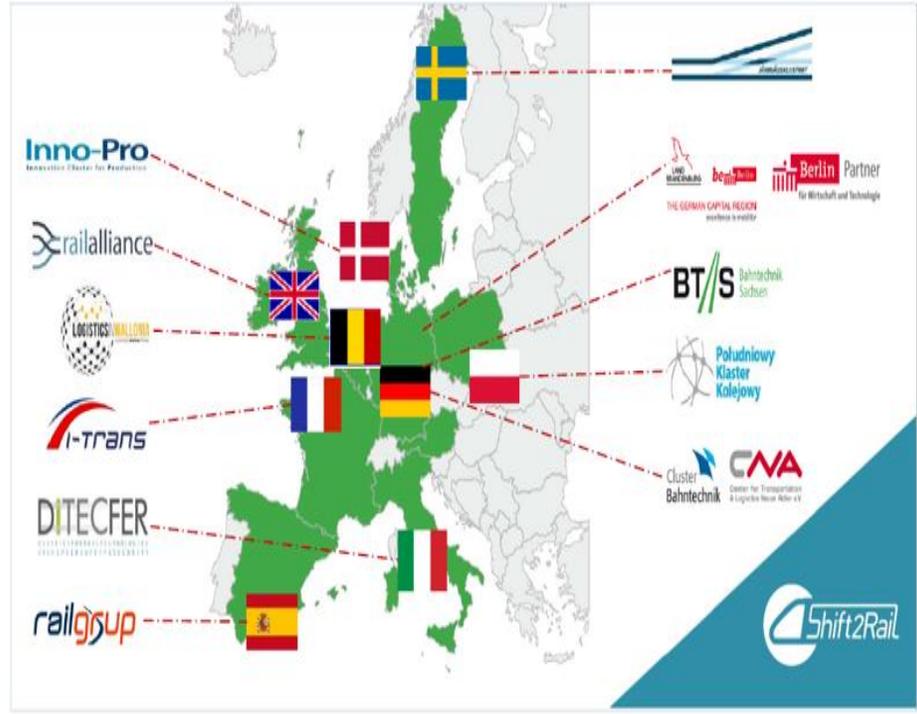
STRIVING FOR CLUSTER EXCELLENCE

Partnerships, alliances and networks

MAIN MAIN Images Global Corp.	indra INDRA	tesco Tesco	PILZ PILZ	examp Examp	WELDON WELDON	Alara Ingeniería Alara Ingeniería	Global Composites Global Composites	Bytvestris Bytvestris
cenx Cenx	Magic Factor S.L. MAGIC FACTOR	magma design MAGMA DESIGN	INCOM INCOM	elekra ELEKTRA	are ARE	IBS Electronics S.L. IBS Electronics S.L.	CAPTRAIN CAPTRAIN	MOBILITY MOBILITY
CIMALSA CIMALSA	TVS SUD TVS SUD	Port de Barcelona Port de Barcelona	ELION ELION S.A.	Diab Diab	Unex UNEX Aparatos Eléctricos S.L.	TicTAP TicTAP	gpo GROTI INGENIERIA	AYAT AYAT
wengler Wengler	PL Meta Engineering Meta Engineering	IPL IPL	CT INGENIEROS CT INGENIEROS	ALSTOM Alstom	renfe Renfe	AngenPfeiler AngenPfeiler	LIMMAT LIMMAT	bettair bettair
OLIVA TORRAS OLIVA TORRAS	USYNCR0 USYNCR0	TMB TMB	imotion Imotion Analytics	3M 3M Spain	Escuela Politécnica Superior Escuela Politécnica Superior	Metso de Sevilla Metso de Sevilla	Sinalux SINALUX	STADLER STADLER
CENIT Centros de Investigación del Transp...	Departament de Territoris Departament de Territoris	Indava Avianets S.L. Indava Avianets S.L.	inetum INETUM S.A.	COEVE Fundación COEVE	ETEXA CONSULTING ETEXA CONSULTING	CIC CIC Consulting Informàtica	rail equip RAIL EQUIP	trafag Trafag España S.L.
aggity Aggity	OPTIMUS OPTIMUS S.A.	Indava Indava	Worthington Worthington	SENER Ingeniería y Sistemas SENER Ingeniería y Sistemas	Almato Saria Almato Saria	esade creapolis ESADE Creapolis	Horn & Bauer Horn & Bauer	AV AV
Windmill Windmill	VISIONA VISIONA	ISC ISC	CAF CAF	MOOSEVA MOOSEVA	Ornel S.L.U. Ornel S.L.U.	eureca! Eureca!	enide Enide	ERION ERION
ROLEN ROLEN	Acerta Engineers - Enginert Acerta Engineers - Enginert	Mass Factory Urban Access Mass Factory Urban Access	Infraestructuras de la Genera... Infraestructuras de la Genera...	tempel Tempel Group	MainRail MainRail	TEKHNE MECHATRONICS INNOVATI...	STEGOTRONIC S.A. STEGOTRONIC S.A.	INFAMON INFAMON GROUP
DILAX DILAX	LAMBLIA COMPOSITES LAMBLIA COMPOSITES	TEAM TEAM	TENALACI Tenalaci Consulting S.A.	Rabolar Heisterbrink Rabolar Heisterbrink	La Caixa S.A.S. La Caixa S.A.S.	Coluoy COLUOY FERRONVIA S.L.	ANSITEC ANSITEC	ZONAIR ZONAIR S.L.
cytel Cytel	Graphicalab S.L. Graphicalab S.L.	TYS TYS	Huawei Technologies Huawei Technologies	tmZ tmZ	connectgrate Connecting with Innovation S.L.	MEC MEC	BABLE BABLE	masats MASATS
TALGO TALGO	FERRAS FERRAS	China China	OPUS Opus Vision Technologies S.	RACC RACC	Canada Group Canada Group	Capgemini Capgemini	Kuadrotek Kuadrotek	Centros de Innovación y Tec... Centros de Innovación y Tec...
SIEMENS SIEMENS	IMA IMA	Panasonic Panasonic	Integratdesign Integrat Design & Develop...	HARTING Iberia HARTING Iberia	COMSA COMSA	Capgemini Capgemini	Kuadrotek Kuadrotek	Centros de Innovación y Tec... Centros de Innovación y Tec...
BOSSARD BOSSARD	PIV GROUP PIV Group	MAPEL MAPEL	g globalvia Globalvia	Mapys Mapys	Autoritat del Transport Metr... Autoritat del Transport Metr...	Capgemini Capgemini	Kuadrotek Kuadrotek	Centros de Innovación y Tec... Centros de Innovación y Tec...
LEITAT LEITAT	Bauer Bauer	SIEMENS SIEMENS	ferrocarril de la Generalitat ferrocarril de la Generalitat	QAD QAD	IDOM IDOM	Capgemini Capgemini	Kuadrotek Kuadrotek	Centros de Innovación y Tec... Centros de Innovación y Tec...



European Rail Clusters Initiative



Cluster de Movilidad Sostenible y Logística Multimodal by Railgrup

IN-MOVE's value chain

renfe

ALSTOM

HUPAC

Talgo

STADLER

SIEMENS

Ingenio para la vida



Transports Metropolitans
de Barcelona

CAF



Port de Barcelona

CAPTRAIN



TRAM



Ayats



Transports Metropolitans
de Barcelona

globalvia

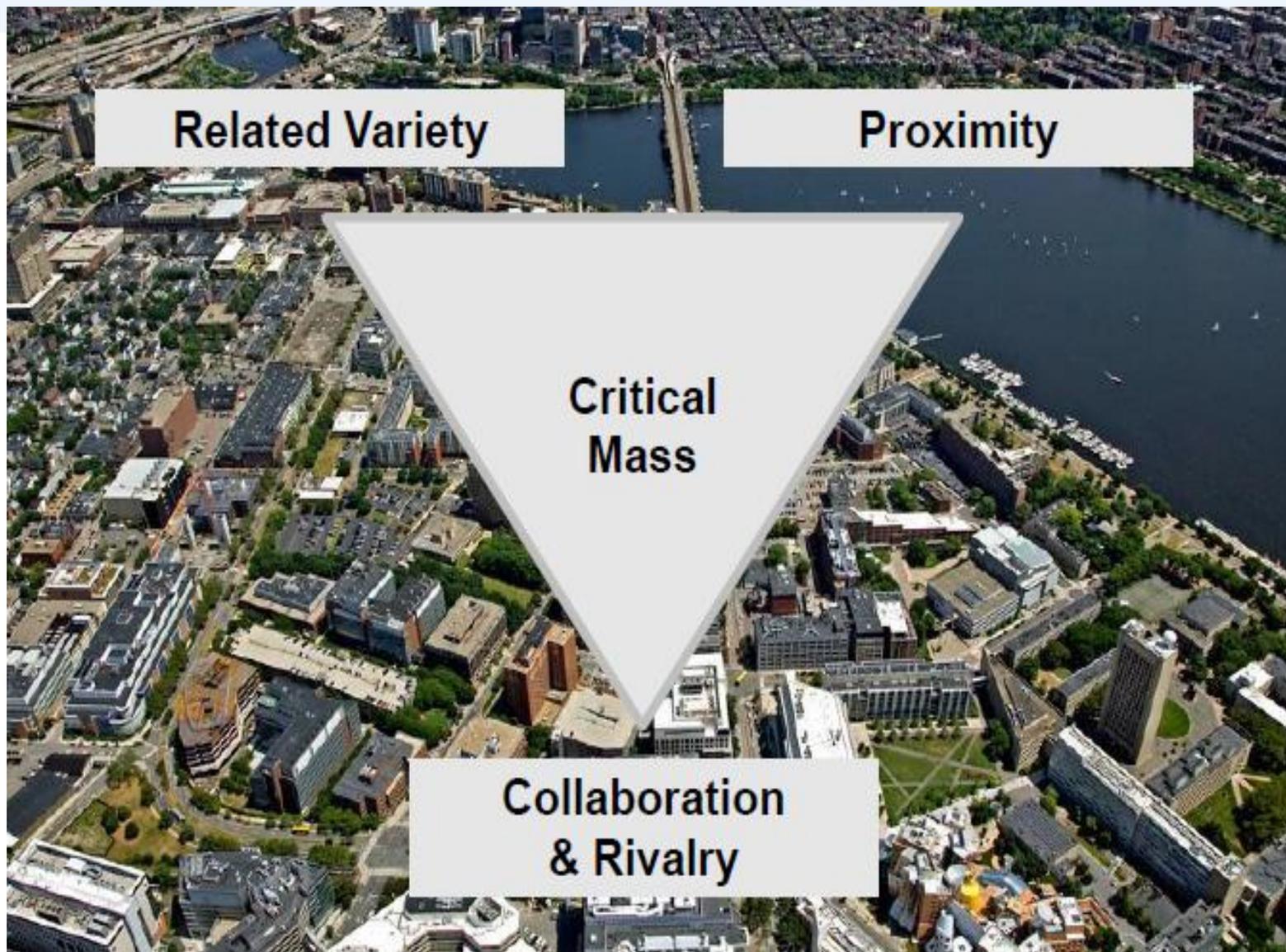
MMM
Group



in-move by Railgrup
Cluster de Movilidad Sostenible y Logística Multimodal

Competitiveness Upgrading in Turbulent Times

in-move by Railgroup



Dr. Christian H. M. Ketels
Harvard Business School
Chair, TCI Advisory Board

*Catalan Cluster Managers
Cambridge, MA
17 May 2022*

WORKSHOPS/EVENTOS
CO-DISEÑADOS
CON TARGET CLIENTE
FINAL

GENERAR
KNOWLEDGE

TRABAJAR INSIGHTS

CREACIÓN GRUPO
TRABAJO ALTO NIVEL
AI GENERATIVA

ECOSISTEMA

PROYECTOS EU
DESARROLLOS
B2B

POSICIONAR

COMUNICAR

CLUSTER
DISSEMINATION
EU's LEVEL via ERCI
- METACLUSTER

by Railgrup

Cluster de Movilidad Sostenible y Logística Multimodal

RAILWAY IS THE FUTURE YET...

Sostenible.... Seguro → Eficiente y Orientado al Usuario

Safety

Efficiency

Experience

Security Monitoring

Road & Network Control

Operation Optimization

Public Service Push



Intelligence

Smart Applications

Business Digitalization



Cognition

Digital Platform

Data Convergence + Service Enablement



Perception

All Things Connected

Infrastructure Digitalization

Connected People

Connected Vehicle

Connected Road

RAILWAY SHOULD BE THE BACKBONE OF A SUSTAINABLE MOBILITY FREIGHT AND PASSENGERS' EU – IT'S NOT YET...

INFRASTRUCTURE DRIVEN WORLD...



ON MOBILITY IN EUROPE

- 1 European mobility as it has developed has empowered many people and implies self-determination; but these **ACHIEVEMENTS** also generate social and ecological **STRESSES**.
- 2 Mass tourism and trips on aircraft and cruise ships are particularly harmful to this **ENVIRONMENT**. The European single market has a **DECISIVE ROLE** to play in this regard and therefore Europeans have a fair share of **RESPONSIBILITY**.
- 3 Motorised **MASS TRANSPORT** has reached its limits. A European transport sector dominated by **FOSSIL FUELS** adds to global warming, pollution and stress.
- 4 Cars occupy too much space. The **LIMITED AVAILABLE PUBLIC SPACE** should be used **MORE EFFICIENTLY** for cycling, walking and various forms of public transport, especially in towns and cities.
- 5 Climate-friendly means of transport and fossil fuels are incompatible. Sustainable **ENERGY AND MOBILITY TRANSITIONS** go hand in hand.
- 6 **TRAINS** and railways will essentially be the backbone of a climate-compatible European transport system, but are today often limited to individual countries. Investments to extend and **REACTIVATE RAIL ROUTES** within and across borders are necessary.

Climate change, rising traffic demand, congestion, security and sustainable energy supply are some of the major issues that the European Union and the wider world are facing. At the same time, good accessibility is necessary for a society to function and to ensure economic development, job creation and housing supply. Tackling these challenges call for the railway sector to take on a larger share of transport demand in the next few decades.

Transport amounts for more than 30 percent of greenhouse gas emissions in Europe. Mobility is a key element of the interconnected European Union and its neighbours. Rail is (?) and has been the way to connect Europe sustainably.

- 7 With its Trans-European **TRANSPORT NETWORK CORRIDORS**, the EU has set up a system for a Europe-wide transport infrastructure. It is crucial that policies implemented within the European Green Deal follow this **TRANS-EUROPEAN IDEA**.
- 8 **DIGITALISATION** of European transport brings along **OPPORTUNITIES** by linking different forms of transport in one single **APPLICATION**. The accessibility and availability of such technologies for everyone is a **CHALLENGE**.
- 9 Transport industries are manifold. The **EUROPEAN AUTOMOTIVE SECTOR** is undergoing thorough **CHANGES**. Bicycle production reinforces regional value creation and strengthens European small and medium-sized businesses.
- 10 **AVOID – SHIFT – IMPROVE** is the strategy to make mobility in Europe more sustainable. The Covid-19 pandemic has forced people to adapt their mobility behaviour and has created the need to **RETHINK** conventional practices.
- 11 The external costs of cars and planes as the most polluting modes of transport are not reflected in what we pay for using them. So far the implementation of the **POLLUTER-PAYS PRINCIPLE** is deeply flawed and needs to be tackled by EU policies such as taxation, carbon pricing or road tolls.
- 12 The **EUROPEAN MOBILITY OF THE FUTURE** entails interlinked, attractive, resource-efficient and climate-friendly means of transport within a European framework and contributes to a **HIGH QUALITY OF LIFE** in cities and **WELL-CONNECTED** rural areas.

KEY DRIVERS for RAILWAY EU



”Door to Door” Mobility Ecosystem

The usage of real-time information and data sharing will provide an accurate status within the full transport system and allow an overall optimization of the transport offer. The emergence of new transports- and communication possibilities allows cities and regions to propose multimodal mobility-as-a-service solutions (focus on shared and on demand) to address the traffic congestion issue and enhance the attractiveness of the public transport. The development of tools for public administration also provides valuable information to optimize the layout of stations and to refine the procedures for incidents. **With rapid development and disruptive solutions**, we can also expect both simpler and cheaper solutions than the now established technology.



Roadmap for a New Mobility Model

Disruptor	Digital Asset Market	Efficiency Play	Goal
New digital businesses built beyond public transport collective foundation with nondigital vested assets	New regulatory and organizational frameworks based on multimodal mobility value chain Customer convenience Agility	Efficiency-Flexibility Frictionless in modal change Multimodal e-Ticketing Fight fragmentation	MaaS for the Common Good MaaS gets where Public Transport not reaches Less congestion Less pollution Less private car



ONE

job in railway transport creates more than

ONE

other job in indirectly dependent economic activities.



RaaS: an example of how public transport is reinventing itself

KEY DRIVERS for RAILWAY EU - LOW EMISSIONS LOGISTICS – BUSINESS & TECHNOLOGY OPPORTUNITY



Environmental Sustainability and Carbon Free Mobility

As the railway is the cleanest mode of transport, promoting modal shift towards rail will support the reduction of emissions. But this is not enough, and rail will implement new light materials, new technical solutions for non-electrified lines and further increase its energy efficiency. **Improving the integration of transport systems in populated areas by reducing noise, vibration and carbon emissions** will be essential to increase social acceptance in urban environments and beyond. Indeed, rail systems are contributing to mitigating the climate change challenge.

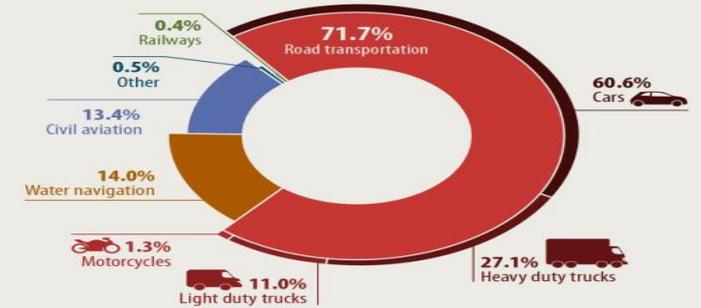
Additional research and innovation actions will improve the current situation from the environmental perspective. For instance to develop smart energy infrastructure. On board and line-side energy storage technologies and charging technologies will make it possible to recover a big amount of the braking energy and will support balancing the flow of energy. Electricity supply using SMART Grid technologies coupled with increasing the residence and variety of supply resources (e.g. main grid, local renewable, recovered, etc.), can be applied not only for rail traction systems but also for road usage and stations. Another example is the

necessity of work from an early phase on the adaptation of regulation and standards to consider (and even favour) the use of the cleanest technology being developed.



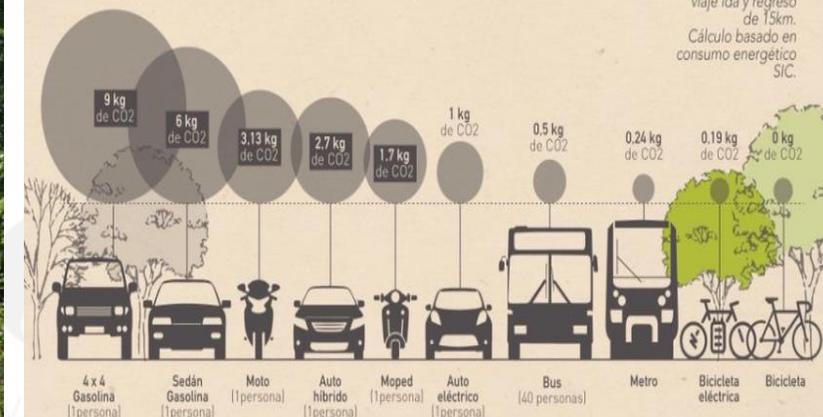
TRANSPORT EMISSIONS IN THE EU

Greenhouse gas emissions breakdown by transport mode (2019)



Source: European Environment Agency (2022)

Comparación de emisiones por viaje*



fuente: www.consumovehicular.cl

CCAM & PDI

-Connected, Cooperative, and Automated Mobility-



CCAM & PDI – The opportunity



CCAM+PDI is a trend promoted from Brussels, with a horizontal character ergo affecting different verticals, and which understands that digitalization (i.e., CCAM) is key to improving the competitiveness, safety and **sustainability** of the new mobility.

**EUROPEAN LEADERSHIP
IN SAFE AND SUSTAINABLE
ROAD TRANSPORT
THROUGH AUTOMATION**

- Strengthen Competitiveness of European Industries
- Increase Safety in road transport
- Reduce negative impact from road transport on environment
- Ensure inclusive mobility and good access for all

Knowledge sharing

Actions

Participation in workshops, fairs, and events CCAM

B2B meetings with CCAM stakeholders at EU & International level

Niche and business opportunities scouting

Insights & business creation [€€€]

Positioning of IN-MOVE and associates as key players in CCAM projects

Return

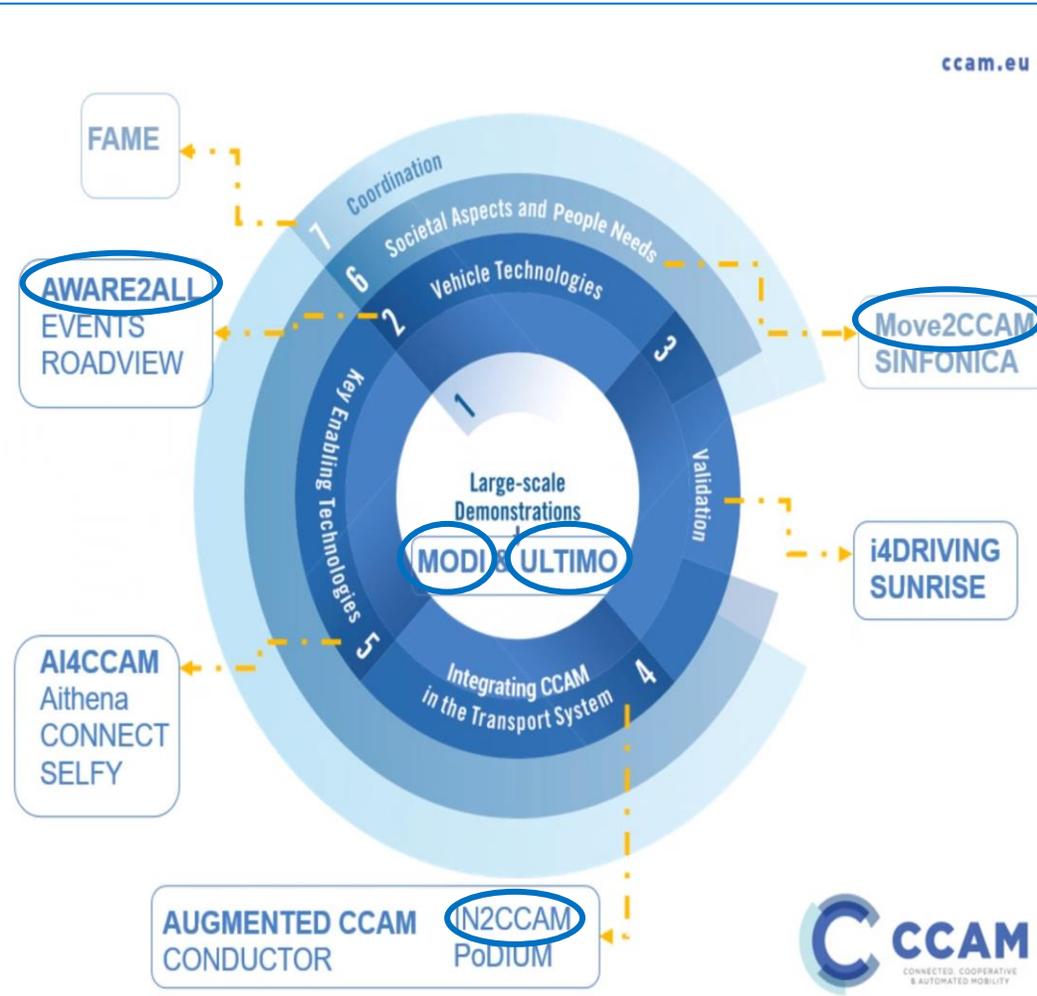
New client's development and access to CCAM spectrum

CCAM running initiatives

Horizon
Europe
Cluster 5
WP

Destination 6
Transport and
Smart Mobility
services

Calls 2021 &
2022 Projects



- +110M € raised by IN-MOVE and its associates in EU CCAM Projects.
- MODI & PoDIUM projects have been generated in cooperation of the cluster's value chain.
- Other initiatives: Augmented CCAM, metaCCAZE.

in-move by Railgrup

International Impact

MODI

A leap towards driving automation level 4 features

The MODI project aims to accelerate the introduction of highly automated freight vehicles through demonstrations, and by overcoming barriers to the rollout of automated transport systems and solutions in logistics. The logistics corridor from the Netherlands to Norway has been chosen for demonstration activities as the Netherlands, Germany, Denmark, Sweden, and Norway are expected to be among the first movers to implement fully automated vehicles in Europe.

MODI comprises five use cases, each describing a part of the logistics chain in confined areas and on public roads. It identifies what is already possible on an automated driving level without human interaction and what is yet to be developed. The MODI objectives are to:

- Implement new CCAM technology
- Define recommendations for the design of physical and digital infrastructure
- Demonstrate viable business models for connected and automated logistics

• Perform technical and socio-economic impact assessments
Major challenges include regulatory aspects and standardisation, border crossings, access control, charging, coordination with automated guided vehicles, loading/unloading and handover from the public to confined areas. The ambition of MODI is to take automated driving in Europe to the next level by demonstrating complex real-life CCAM use cases and setting examples of business-wise CCAM integration in logistics.

The consortium consists of 34 partners from seven EU Member States and Norway (Horizon Europe associated country). Four demonstrations are planned: Hamburg (Germany), Rotterdam (the Netherlands), Moss (Norway) and Gothenburg (Sweden).



COORDINATOR

ITS Norway (Norway)

PROJECT DURATION

01/10/2022 – 31/03/2026

EU FUNDING

€23,030,095

WEBSITE

<https://modiproject.eu/>

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PODIUM

Accelerating the implementation of CCAM technology

PoDIUM aims to build trust and sustainability for Connected, Cooperative and Automated Mobility (CCAM) and accelerate the implementation of CCAM services. Physical and digital infrastructure (PDI) is key to improving CCAM services. Physical infrastructure elements include road side traffic signs, communication network components and vehicles. Digital components involve traffic rules and regulations, as well as input from roadside, vehicle and user sensors.

PoDIUM will identify and assess the connectivity and cooperation enablers to achieve higher levels of automation and advance important PDI technologies. The necessary enhancements will be validated and evaluated in real traffic conditions in three well-equipped Living Labs in Germany, Italy and Spain. Connected and Automated Vehicles (CAVs),

conventional vehicles and Vulnerable Road Users (VRUs) will be integrated with PDIs in all the project's use cases, while data coming from multiple channels and external sources will be used to facilitate the identification of conflictive situations and improve the interaction between road users.

The consortium consists of 28 partners from 10 EU Member States. Five demonstrations are planned: Figueres - Perpignan cross border corridor (France/Spain), Ulm-Lehr (Germany), Turin and Autostrada del Brennero highway tunnel (Italy), and Barcelona (Spain).



COORDINATOR

ICCS (Greece)

PROJECT DURATION

01/10/2022 – 30/09/2025

EU FUNDING

€8,999,890

WEBSITE

<https://podium-project.eu/>

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- MODI & PoDIUM projects generated within IN-MOVE!

- Other Projects where IN-MOVE's associates participate : ULTIMO, AWARE4ALL, MOVE2CCAM...

- Top 18 initiatives in Horizon Europe – CINEA!

Extracto de brochure oficial CCAM de CINEA ([enlace](#))

International impact



CNN International highlights the benefits of the MODI Project!

MODI A LEAP TOWARDS
SAE L4 AUTOMATED
DRIVING FEATURES

HOME ABOUT LIBRARY NEWS CONTACT



CNN International highlights the benefits of the MODI Project

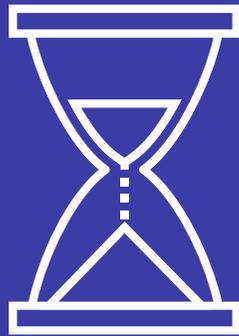
20/03/2023

CNN International has broadcasted a report about the MODI Project's goals in Global Connections, a program that focuses on examples of positive impacts on international trade.



in-move *by Railgrup*
Cluster de Movilidad Sostenible y Logística Multimodal

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



Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or CINEA. Neither the European Union nor the granting authority can be held responsible for them.



Co-funded by the European Union

Use cases

CCAM SOLUTIONS TO IMPROVE LOGISTICS OPERATIONS



PORT OPERATIONS NETHERLANDS

CCAM vehicles in current logistics operations at port site.



MOTORWAY TO HARBOUR GERMANY

CCAM vehicles approaching a confined area at the harbour.



HUB-TO-HUB SWEDEN

Hub-to-hub traffic with CCAM heavy-duty vehicle.



BORDER TO PORT NORWAY

CCAM vehicles from EU border crossing to a port.



MODI CCAM CORRIDOR

MODI CCAM test corridor from Rotterdam to Oslo.

Expected outcome

MODI KEY RESULTS



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



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



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



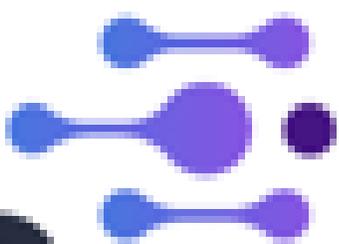
New viable business models and tools creating value along the logistic chain by utilizing CCAM technology and vehicles.



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



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



PODIUM

in-move *by Railgrup*
Cluster de Movilidad Sostenible y Logística Multimodal

Three Living Labs (LLs) and 5 Use Cases (UCs)

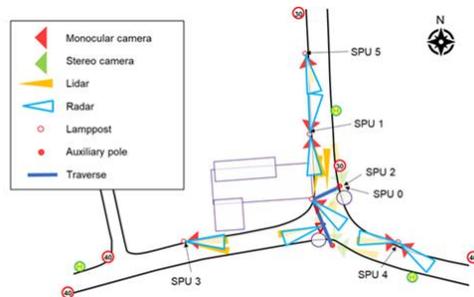
Common aspects in all LLs

- Multi-access Edge Computing
- LTE and 5G coverage
- ITS-G5 (automotive WiFi) infrastructure
- Connected automated vehicle, incl. connectivity OBUs
- Mobile devices representing info regarding VRUs

Ulm-Lehr LL in Germany

Urban T-junction equipped with sensing and data processing infrastructure + communication (UC1)

- 5G mmWave coverage
- 60GHz-WiFi
- Multipath connectivity
- RSU and Sensor Processing Units (SPUs) supporting multiple communication technologies



LL in Spain

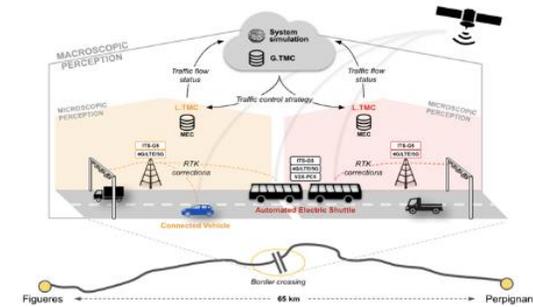
Real urban traffic environment (UC2):

a **corridor** in the **city of Barcelona** that connects two points through a set of intersections and main roads (multiple alternative paths).

- Emergency vehicles
- Emergencies Management Centre
- Traffic light controllers

Spain-France **cross-border** corridor (UC3):

- Connected automated shuttle
- MEC servers on each side of the border
- Includes **urban and suburban** areas



LL in Italy

Focusing on software integrity, trust and truthfulness enhancements

A **complex urban intersection** in the City of Turin (UC4)

- Real edge infrastructure by TIM

Highway tunnel located on the Autostrada del Brennero (UC5)

- A22/BRE Traffic Control Centre
- RSUs along the motorway axis
- Data from sensors and vehicles



Expected Impact

- Provide an **enhanced blueprint for CCAM services based on tightly integrated physical and digital infrastructures** via the digital twin concept.
- **Enhance quality of and trust in external data via a truthfulness assurance mechanism**, meeting the requirements of cross-border interoperability and continuity.
- Demonstrate the **potential, feasibility and sustainability of multi-connectivity, multipath communications and 5G mmWave for automotive-related services**.
- **Support the vision of low carbon and more energy efficient transport with increased safety**, especially for VRUs
- **Increase the uptake of CCAM related systems and services** by identifying and assessing the cooperation enablers and needs and providing real-life validation.

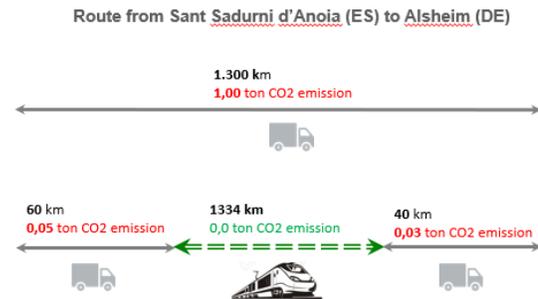
Wine Train – First MML Transit for the Sector in Spain, 2021



ASSETS in THE MULTIMODAL LOGISTICS STRATEGY, IN PRACTICE GREEN DEAL DIRECT POSITIVE IMPACT



Impact test Freixenet Nov. 2021



TRAILS – MULTIMODAL LOW EMISSION LOGISTICS



Barcelona city

Sector / Subsector of
Applicability

Sustainable mobility /
Logistics

Technological area

Digital society /
Digitalisation / IoT / Sensors

Green challenges

Sustainability of food
production systems;
Sustainable mobility;
Climate change mitigation
and adaptation

SDGs impact



Objective / Challenge

To reduce CO₂ emissions from the viticulture sector exports.

Environmental impacts and benefits addressed

- ✓ To reduce greenhouse gas emissions from viticulture exports.
- ✓ To promote the use of railway transports for viticulture exports.
- ✓ To reduce viticulture exports time and costs.

Solution's description

- ✓ The solution has developed a logistic model capable of delivering European viticulture exports through railway transport.
- ✓ The solution is based on the TrackOne Cloud Application, a software that enables the supply chain complete visibility through tracking, tracing and monitoring of the goods and assets exported.
- ✓ The technology employs sensors to analyse the conditions (speed, temperature, vibrations...) in which goods are transported.
- ✓ The sensors send the data to the IoT Cloud platform, thus enabling a real time tracking and monitoring of the cargo.

Main constraint / Difficulty

Current Logistics Supply Chain are mainly (97% in Spain) by Road.

Lack of Market Places for Matching Available Volumes



KPIs

- CO₂ (%): 92% less emissions.
- CO₂ – Tons saved – 0,92 Tn/1 transits.
- Payload : more than 3%
- Longest distance by sustainable mode of transport (train): 1200Km.

Partners



INTERNATIONAL COOPERATION THROUGH CLUSTER FROM ERCI



It's about Communication between people, the rest is Technology. Peter Ferdinand Drucker.

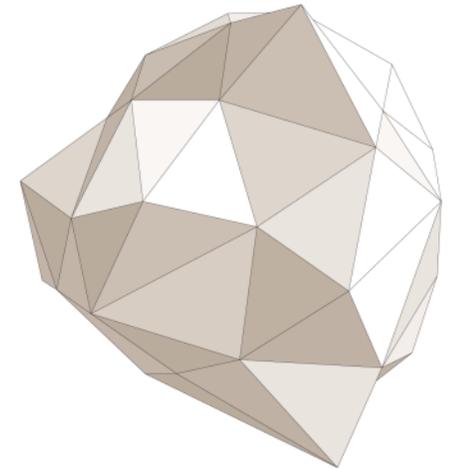
Cluster it!

in-move *by Railgrup*

Muchas gracias por su atención

Vielen Dank für eure Aufmerksamkeit

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INNOVATION BROKERS