PORT SOLUTIONS FOR EFFICIENT, EFFECTIVE AND SUSTAINABLE MULTIMODALITY

MultiRELOAD

MultiRELOAD
Horizon Europe project

Achim Klukas, Fraunhofer IML

24th April 2024

www.multireload.eu

Consortium


PORT OF
SWITZERLAND


ASE
Advanced Security Engineering


prodevelop


Fraunhofer


CargoBeamer®


IDIT
Institut du Droit International des Transports et de la Logistique


HAFEN WIEN
ein unternehmen der wienholding


Interregional
Alliance
for the
Rhine-
Alpine
Corridor
EGTC


alice
Alliance for
Logistics Innovation
through Collaboration
in Europe


RHEINPORTS


WIEN
CONT


HUNGARIAN FEDERATION
OF DANUBE PORTS
2012


RSOE


pro
DANUBE
MANAGEMENT GMBH


Smart Freight
Centre


Group
NOSTA
Logistics to the point


EuroVienna
experts for EU projects
ein unternehmen der wienholding

duisport


RUPPRECHT CONSULT
Forschung & Beratung GmbH


OBERÖSTERREICH
UNIVERSITY
OF APPLIED SCIENCES
UPPER AUSTRIA


DST


eYARD


ROMÂNIA

MultiRELOAD

PORT SOLUTIONS FOR SUSTAINABLE MOBILITY

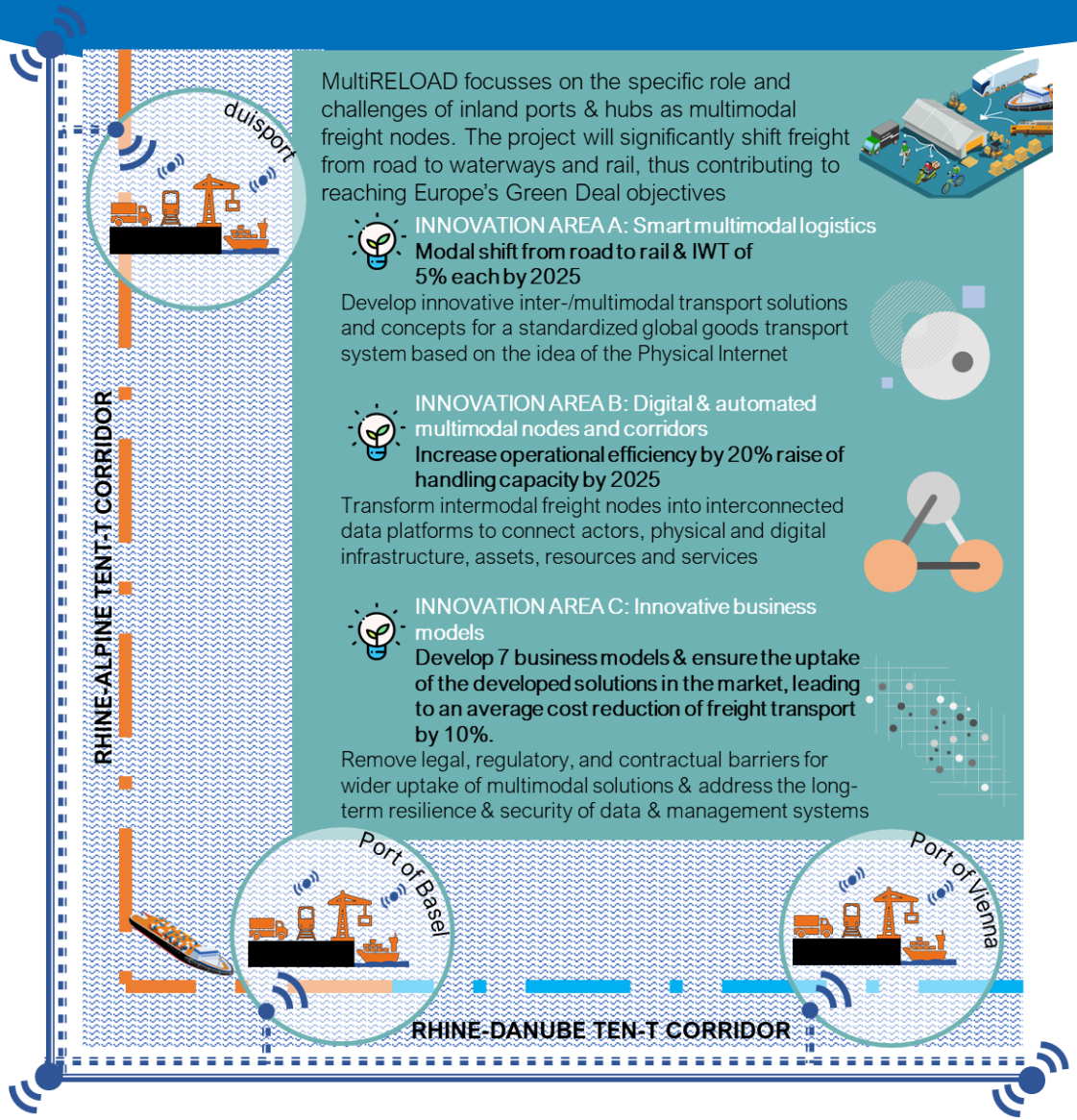
MultiRELOAD: Port solutions for efficient, effective and sustainable multimodality

Innovation Action CL5-2021-D6-01-07

More efficient and effective multimodal freight transport nodes to increase flexibility, service visibility and reduce the average cost of freight transport

Sept. 2022 – Aug. 2025

Approach



MultiRELOAD
PORT SOLUTIONS FOR SUSTAINABLE MOBILITY

MultiRELOAD will work towards realising the Physical Internet along two major European TEN-T corridors Rhine-Alpine/ Rhine-Danube by demonstrating innovative multimodal freight solutions & services on three levels:

1) Terminal 2) Node 3) Corridor

MultiRELOAD
PORT SOLUTIONS FOR SUSTAINABLE MOBILITY

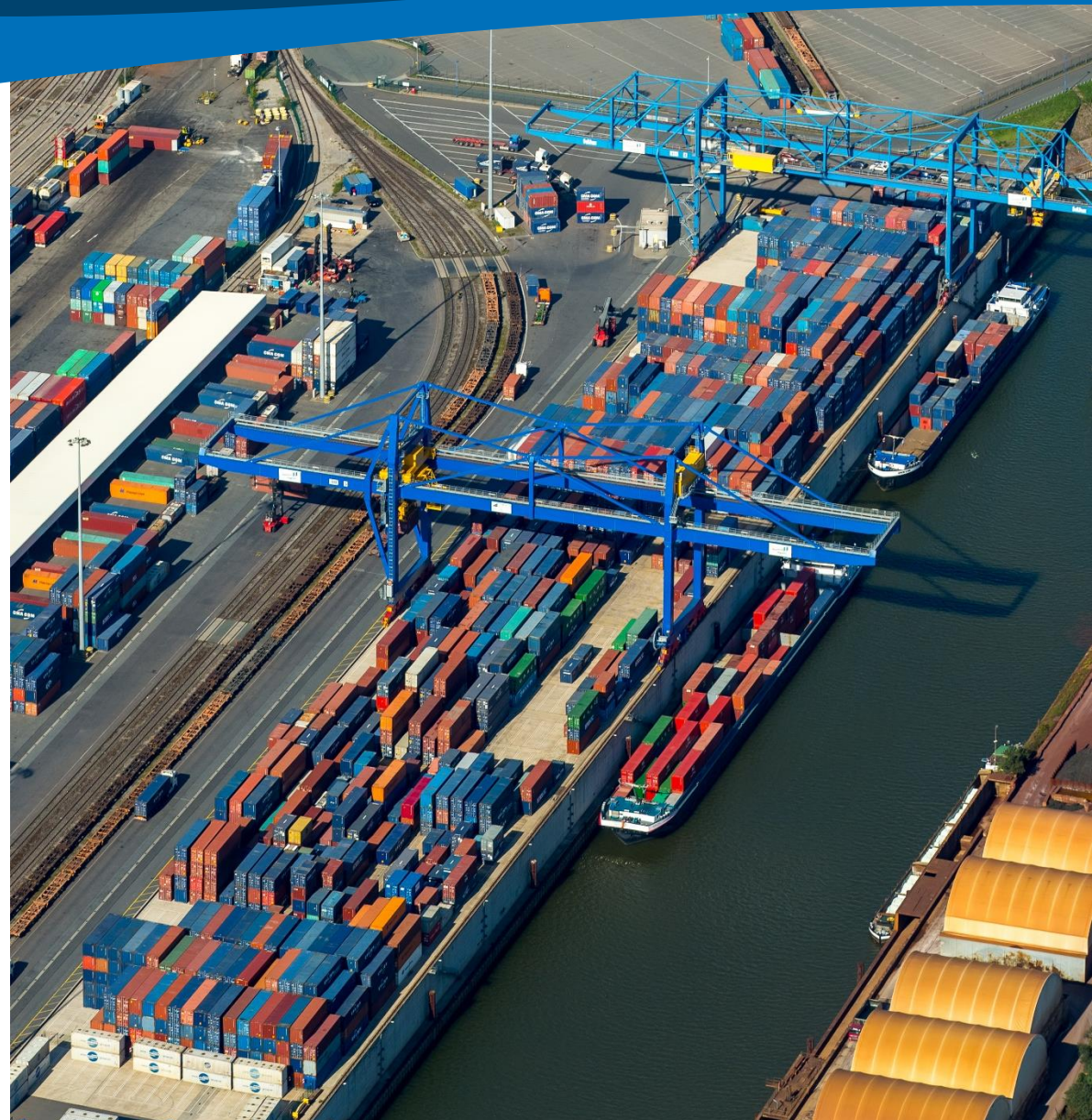
Demonstrators

A - Smart Multimodal Logistics

- A1 - Flexible, high volume, fully automated multimodal shift from road to rail
- A2 - Multimodal transport of bulk cargo on the Danube

B - Digital and Automated Multimodal Nodes

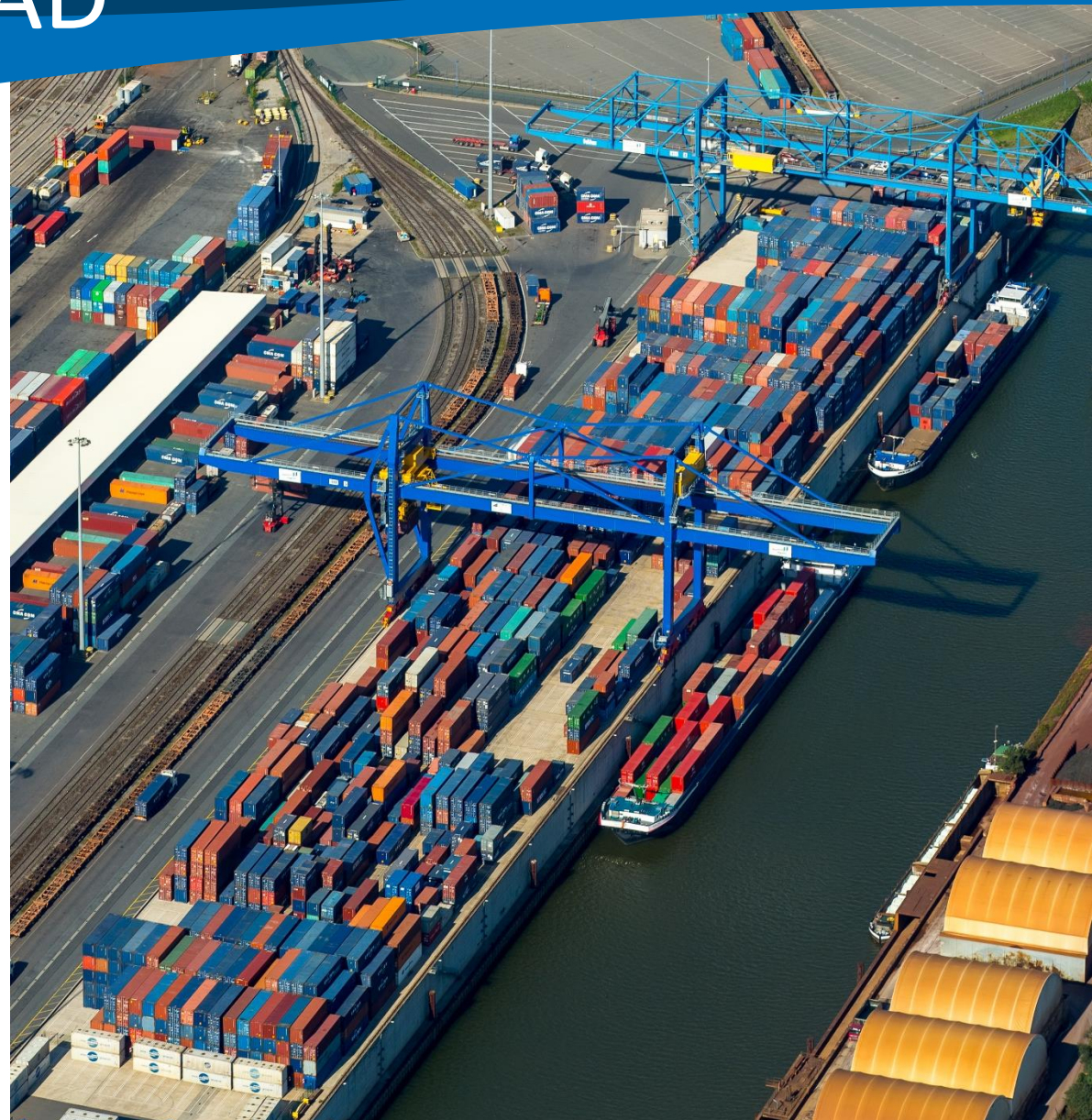
- B1 - Automation of handling processes in inland terminals
- B2 - Predictive maintenance for port handling equipment
- B3 - Terminal Simulation and predictive container positioning
- B4 - Multimodal Node Digital Twin
- B5 - Multimodal Corridor Digital Service



MultiRELOAD
PORT SOLUTIONS FOR SUSTAINABLE MOBILITY

Objectives of MultiRELOAD

- To accelerate the use of digital & automated processes to increase operational efficiency
- To identify automation solutions and shift to multimodal transport potential through automated port operations
- To develop Multimodal Node Services: strengthening digitalisation and service development by data integration
- Develop smart solutions for multimodal nodes paving the way towards physical internet nodes and transport chains



Demonstrator B1: Automation of handling processes in inland terminals by determining the position of loading units

MultiRELOAD
PORT SOLUTIONS FOR SUSTAINABLE MOBILITY

Problem definition

- Automatic position detection not available in the terminals
- Necessary for automation of a CT terminal

Data generation

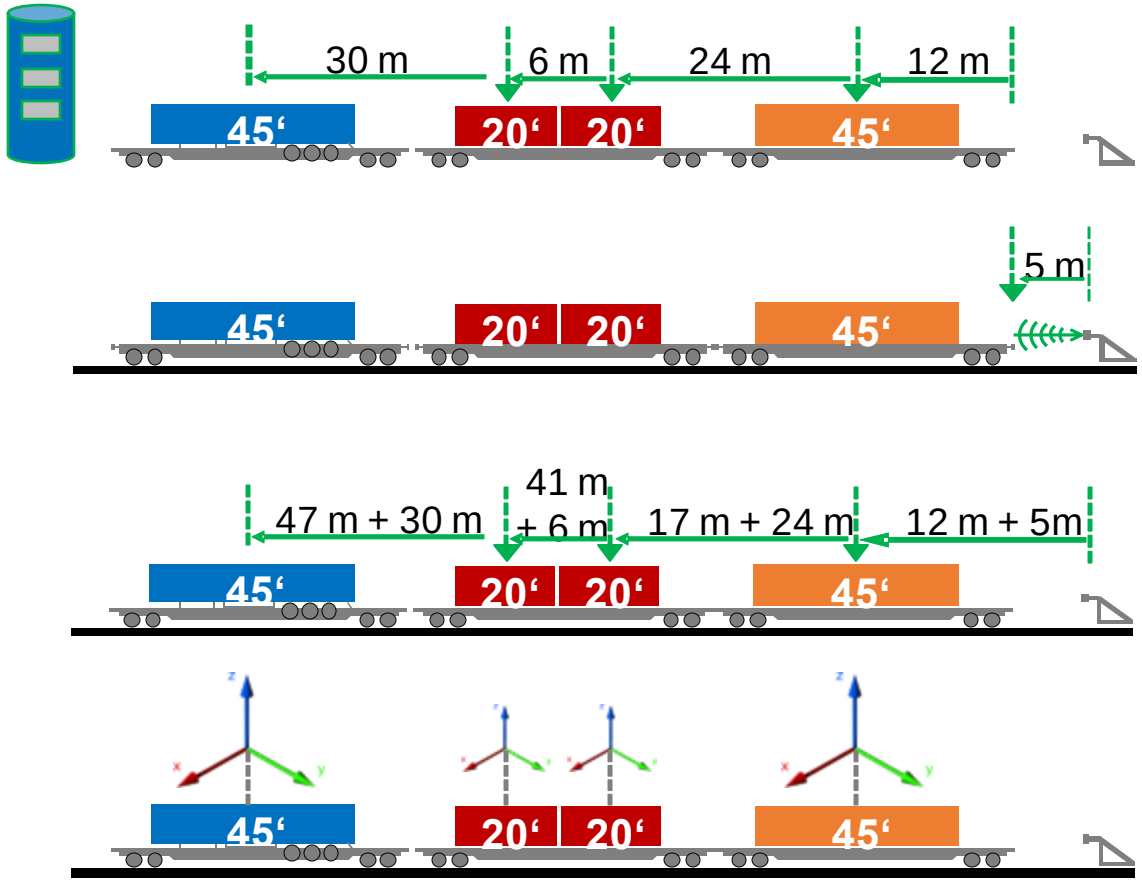
- Rail Gate for collecting basic data (ISO code, wagon number, position of the container on the train / wagon)
- Wheelset sensor to determine the tracks used for the train in the CT terminal
- Cameras / Lidar sensors at the crane to determine the position of the train section in the CT terminal

Demonstrator B1: Automation of handling processes in inland terminals by determining the position of loading units

MultiRELOAD
PORT SOLUTIONS FOR SUSTAINABLE MOBILITY

Objectives of B1

- Technological development of bumper detection (lateral & from above), container recognition and estimation the middle point of the loading unit
- Development container numbers & ISO-Code recognition
- Detection length over buffer
- Development estimation the middle point of the loading unit (LU)

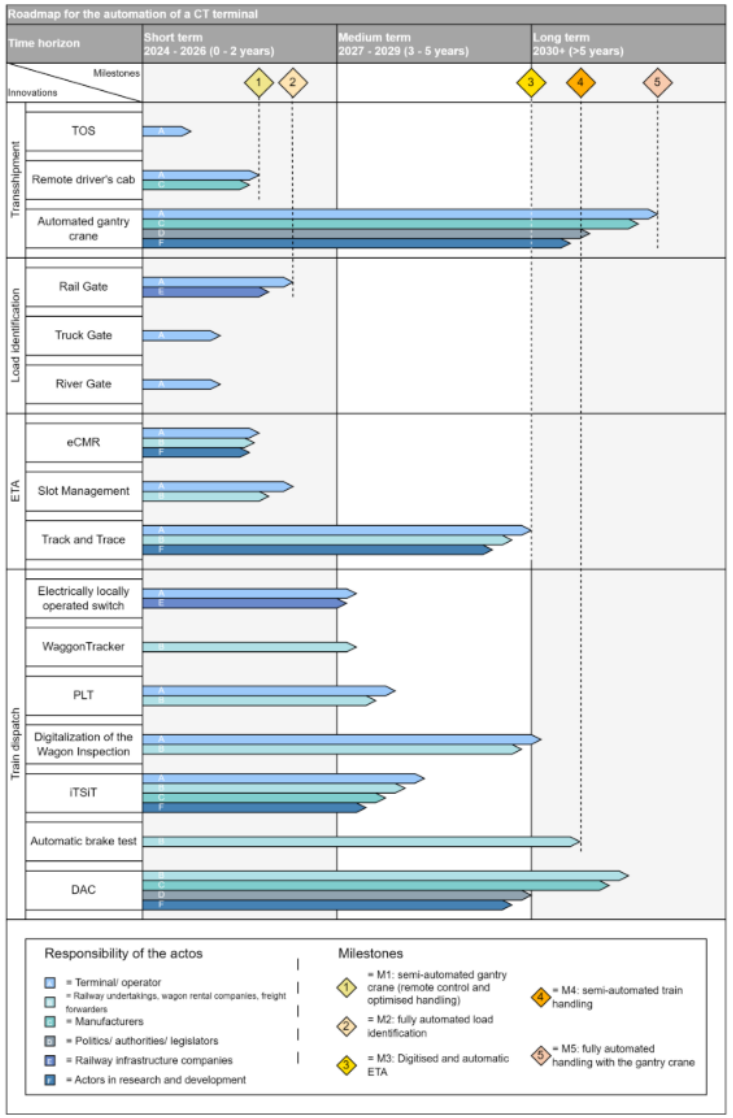


Deliverable: Automated Port and Terminal Operations for Multimodal Nodes – Roadmap

Analysis of the automation and digitalization prospects within multimodal nodes

The analysis spans various dimensions, including

- challenges, and potential of automation for multimodal nodes,
- a strategic roadmap for automation,
- the legal frameworks and risk analyses associated with automation and digital technologies



User Forum

- First User Forum successfully organised in the frame of the **Danube Ports Days 2023** event in Vienna
- Second User Forum scheduled on 14 May in the frame of the **Future Logistics** event in Duisburg
- Third User Forum scheduled on 29-30 October in the frame of the **Danube Ports Days 2024** event

MultiRELOAD

PORT SOLUTIONS FOR SUSTAINABLE MOBILITY

Thank you for your attention!

Achim Klukas

Phone: +49 152 29400402

Email: achim.klukas@iml.fraunhofer.de

Fraunhofer IML

www.multireload.eu

https://www.linkedin.com/company/multireload-project

Funded by the European Union

The project receives funding under the Horizon Europe Call "Safe, Resilient Transport and Smart Mobility services for passengers and goods" | Call ID: HORIZON-CL5-2021-D6-01, Grant ID: 101069796