

TalkNET

A cooperation project for multimodal environmentally-friendly freight transport



INTRODUCTION

Harmonized mechanisms of international cooperation among freight transport stakeholders are essential to strengthen environmentally-friendly multimodal transport in central Europe. Enhancing sustainable mobility - both in terms of energy efficiency and environmental responsibility - is one of the guidelines within the EU transport policy.

TalkNET - Transport and Logistics Stakeholders Network - focuses on a better coordination between international stakeholders to foster

- the integration between ports, inland terminals and transport operators and
- efficient and sustainable multimodal logistic nodes and services.

It is an innovative approach because it leverages on the optimization of already existing infrastructures and on transferable solutions developed together with freight transport stakeholders.

15 partners in 8 central European countries collaborated within the TalkNET project. They all worked together with logistics stakeholders to support the creation of a favorable framework for logistics services in central Europe, by improving the optimization of multimodal logistics connectivity and increasing the environmental performance of multimodal nodes and freight transport system.



LEAD PARTNER



PARTNERS



WHO WE ARE

CROATIA

- 1 Port of Rijeka Authority

CZECH REPUBLIC

- 2 Regional Development Agency of Ústí Region, PLC

GERMANY

- 3 Italian-German Chamber of Commerce in Munich
- 4 Lokomotion Gesellschaft Für Schienektraktion mbH

HUNGARY

- 5 Freeport of Budapest Logistics Ltd
- 6 Rail Cargo Hungaria Goods Transport Private Limited Company

ITALY

- 7 Port Network Authority of the Eastern Adriatic Sea

- 8 North Adriatic Sea Port Authority

- 9 Veneto Strade S.p.A

- 10 ZAILOG Scarl Quadrante Europa Freight Village

POLAND

- 11 Szczecin and Swinoujscie Seaports Authority S.A.

- 12 Westpomeranian Region

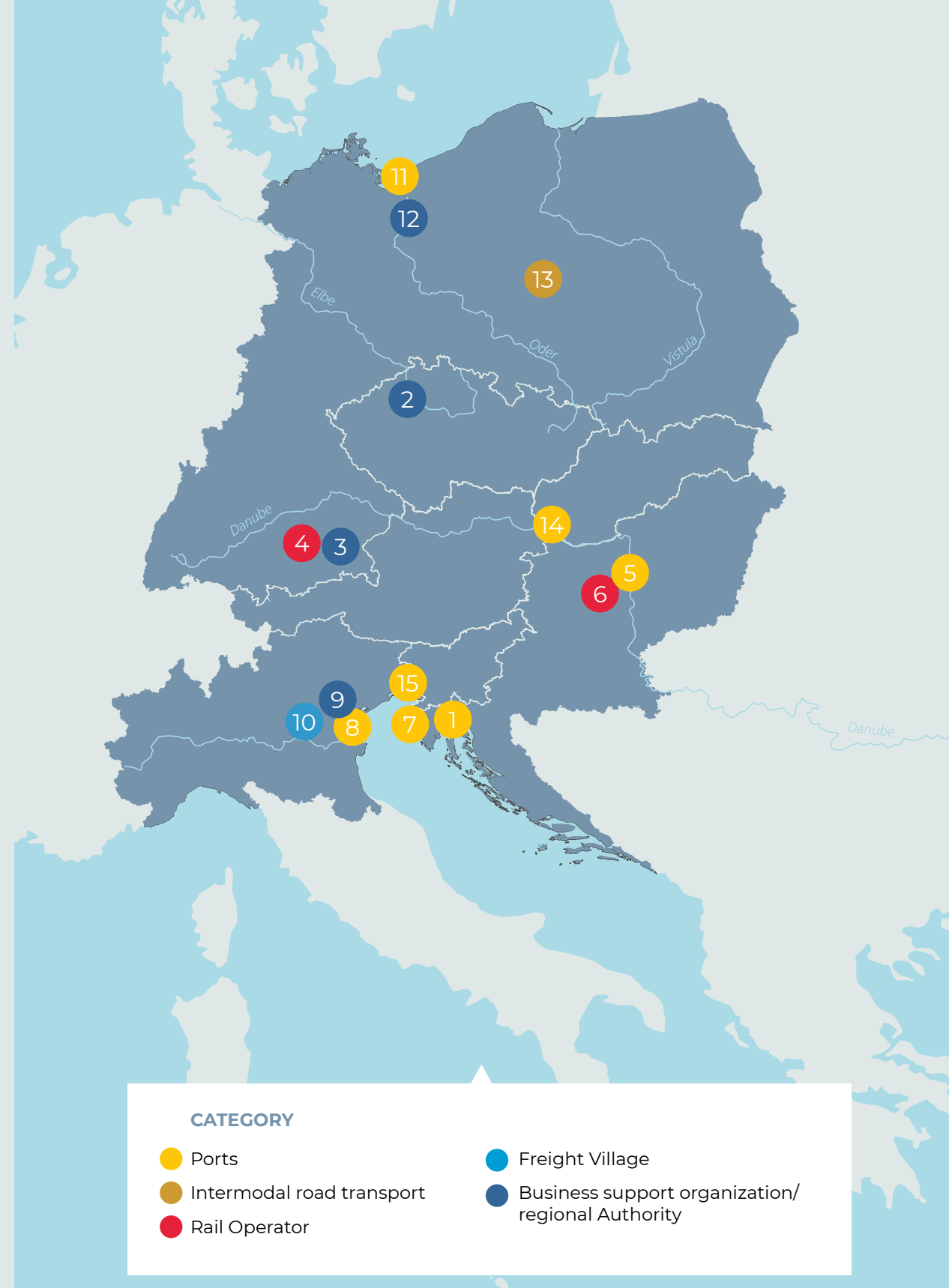
- 13 Codognotto Poland

SLOVAKIA

- 14 Public Ports, JSC.

SLOVENIA

- 15 Luka Koper, port and logistic system, public limited company



2,5 MIL€

TOTAL BUDGET



39 MONTHS

PROJECT DURATION



15

PROJECT PARTNERS



12

OBSERVERS



8

COUNTRIES



9

PORTS

Rijeka, HR
Budapest, HU
Venezia, IT
Trieste, IT
Szczecin, PL
Swinoujscie, PL
Bratislava, SK
Komarno, SK
Koper, SI



1

FREIGHT VILLAGE



2

RAIL OPERATORS



1

LOGISTIC PROVIDER



4

AUTHORITIES/ AGENCIES

CATEGORY

- Ports
- Intermodal road transport
- Rail Operator
- Freight Village
- Business support organization/regional Authority

THE PROJECT

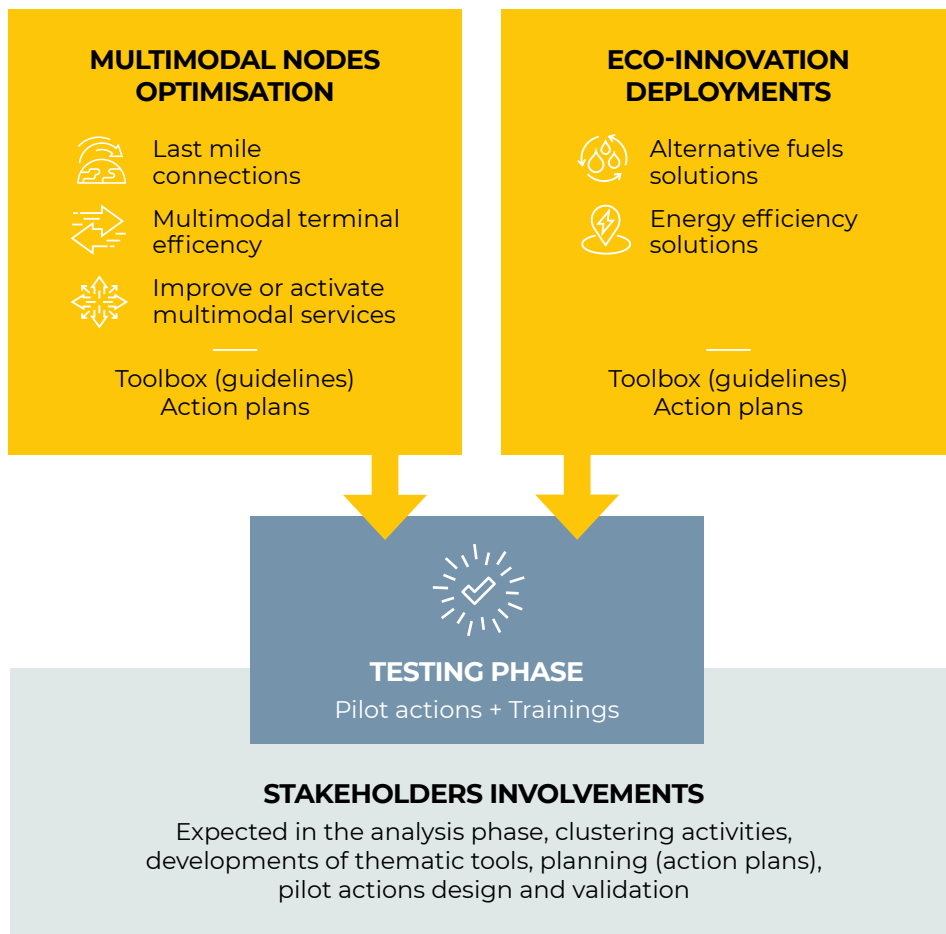
TalkNET – Transport and Logistics Stakeholders Network - is a project co-funded by the Interreg CENTRAL EUROPE Programme 2014-2020. It aims to enhance multimodal efficiency and sustainability in the transnational freight transport system of the central Europe area, bringing together main ports, inland terminals and logistics players.

These are the main goals of the project:

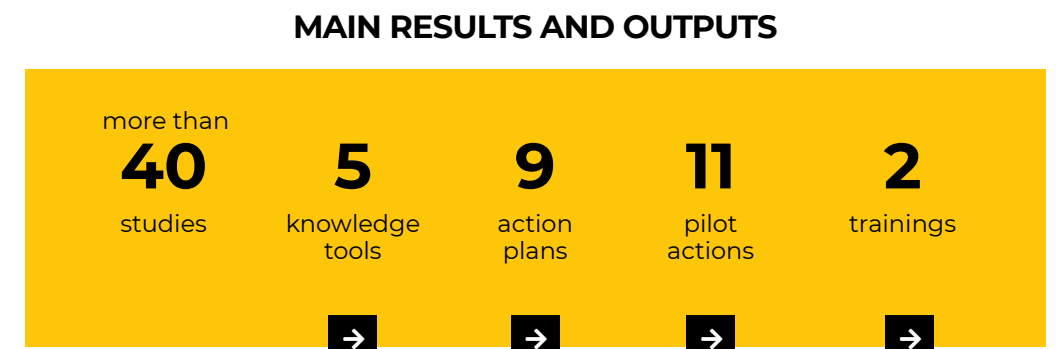
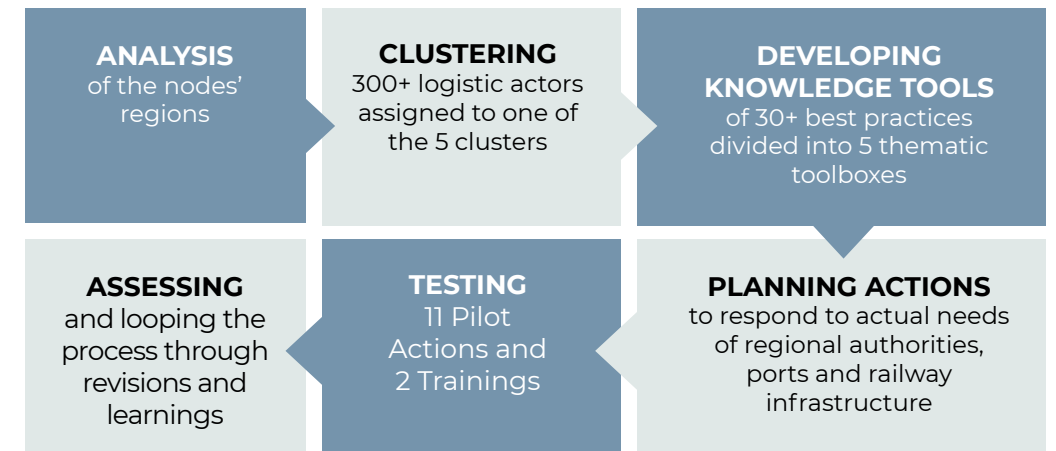
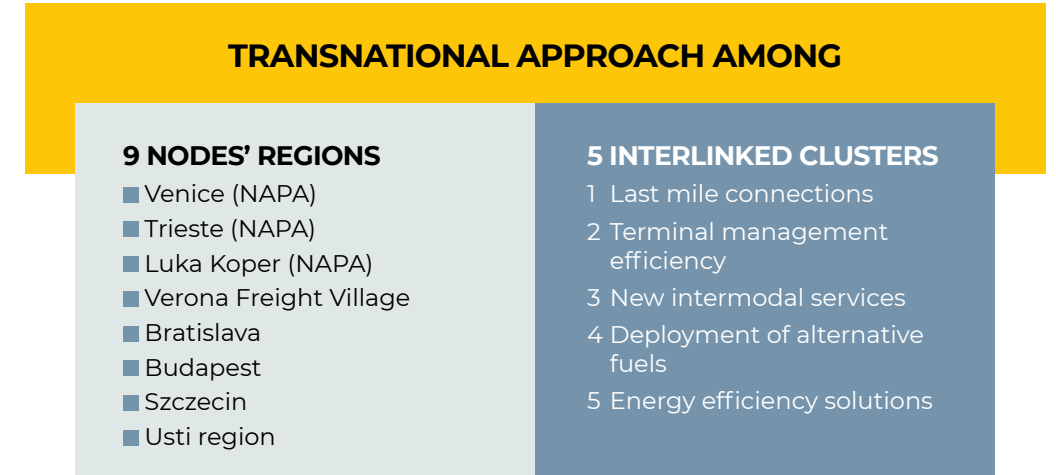
 **strengthening the efficiency of the logistic nodes, their hinterland connections and their related logistics services;**

 **deploying alternative fuels and energy efficient solutions able to reach EU low-carbon targets.**

They have been tackled by developing: common knowledge tools, action plans, pilot actions, training activities and able to support sustainable investments in Multimodal Nodes Optimisation and Eco-Innovation Deployments.



THE WORKFLOW



KNOWLEDGE TOOLS

BEST PRACTICE

1 LAST MILE CONNECTIONS

- 1 Last mile connections
- 2 Reduction of rail transport time
- 3 Cargo-Tram in Dresden

2 MULTIMODAL TERMINAL EFFICIENCY

- 4 Wagon sharing
- 5 Shunting service
- 6 Access control and traffic management system

3 IMPROVE OR ACTIVATE MULTIMODAL SERVICES

- 7 High Speed/High Capacity railway line – Verona-Pomezia
- 8 City logistics in Marseille
- 9 Project Kvarken Multimodal Link
- 10 Increasing intermodality
- 11 Sustainable Świnoujście-Trelleborg MoS
- 12 Expanding the use of combined freight transport (CZ)
- 13 Support of combined cargo transportation (CZ)
- 14 Modular train concept for flexible transport solutions

4 ALTERNATIVE FUELS SOLUTIONS

- 15 Cold ironing
- 16 wood biomass
- 17 Alternative Fuel-based recharging solutions (Paris & Budapest)
- 18 Electrification of port railway facilities in Nuremberg
- 19 LNG deployment in the North of Italy
- 20 LNG + Intermodality: Corridor IT-UK
- 21 Decarbonisation solutions - ALICE

5 ENERGY EFFICIENCY SOLUTIONS

- 22 Eco-solutions deployment
- 23 Eco-solutions deployment
- 24 Innovative technology for gantry cranes' energy savings (Hupac)
- 25 Eco-driving practice
- 26 LEADER process for eco-driving
- 27 Cranable mobile platform
- 28 Time-multiplex control unit system for (older) locomotives TMC/ZMS

ACTION PLANS

Port of Venice
Port of Trieste
Port of Koper
Port of Rijeka
Verona Freight Village
Public Ports Bratislava
Freeport of Budapest
Szczecin and Świnoujście Ports
Usti Nad Labem

Multimodal nodes optimisation (Clusters 1-3)

Eco-innovation deployments (Clusters 4-5)



PILOT ACTIONS & TRAININGS

The 11 pilot actions tested solutions concerning specific challenges identified by the project partners and stakeholders in the nodes' regions.

This happened according to the following sub topics:

improve multimodal nodes of the main transport network

optimize terminals' operative and logistics management systems

create new multimodal services to tackle bottlenecks affecting the main transport routes (rail, road, sea)

deploy potential alternative fuels for ports/inland terminals and logistics operators

create management solutions to reduce energy waste during all transport/handling operations.



The outcomes of the pilot actions described in following pages show practical possibilities and solutions which can also be transferable to and replicable in other areas.

[VIEW MORE](#) →

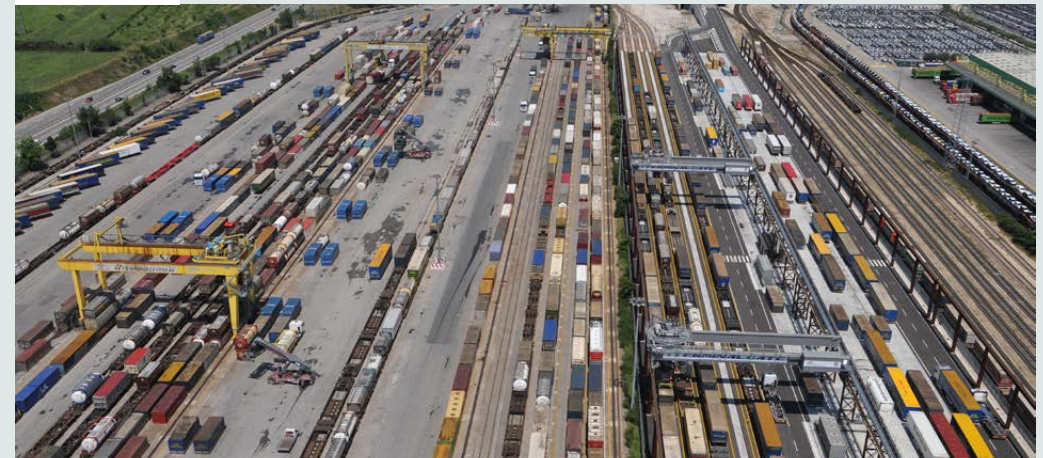
PA FOR LAST MILE CONNECTIVITY OF MULTIMODAL NODES

FEASIBILITY STUDY FOR A NEW RAIL TERMINAL



RESULT

Feasibility study for a new terminal module



CHALLENGE

The Verona node is affected by growing rail freight traffic which will increase significantly after the opening of the Brenner Basis Tunnel (BBT) scheduled for 2028. In addition, the opening will be followed by an increase in traffic with longer and heavier trains. It has been calculated that most terminals must be ready to handle trains of up to 750 m (instead of 600 m) and with a weight of up to 2,000 tonnes (instead of 1,400 tonnes).

GOAL

Extension of the terminal area of the Verona-IT freight village in order to deal with growing traffic and new requirements.

METHODOLOGY

On the basis of technical stakeholder meetings, a cost-benefit analysis and a simulation of the operation of the new module, the TalkNET Working

Group carried out the feasibility study for the new terminal module. This was particularly challenging as the plan foresees the development of a dedicated road system on both the external and internal road network in order to ensure that no additional constraints due to the new module would slow down traffic in the area.

OUTCOMES / LESSONS LEARNT

The feasibility study will allow the upgrade of the existing terminal, realizing a new fourth module. The implementation will start in a couple of years; completion is foreseen before BBT's opening.

The study can be used as guideline for other European inland terminals and maritime ports that aim to upgrade their infrastructure in order to face a growing railway freight traffic volume.

INNOVATIVE CONTROL SHUNTING SYSTEM & ICT/ITS TOOLS FOR RAIL TRAFFIC



ICT/ITS TOOLS FOR RAIL TRAFFIC



RESULT Improved IT systems



CHALLENGES

The Port of Venice represents one of the most important port and logistics systems of the Adriatic area. To guarantee efficient railway accessibility among a steady rail traffic growth, the port aims to optimize the management of railway shunting operations by:

- enhancing the existing railway telematics systems for shunting operations (SIMA) in Marghera Port;
- improving the coordination between local and national paths.

GOAL

To increase the overall capacity of the Marghera Port.

METHODOLOGY

The following actions were carried out in close collaboration with the main stakeholder ERF - Operation of the Marghera port railway junctions (Esercizio raccordi Ferroviari di porto Marghera), holder of the service of

general interest of rail shunting at the Port of Venice:

- Updating SIMA using machine-learning and logistic algorithms that have produced SIMA2, a telematic system able to optimize the efficiency of procedures. SIMA2 also allows interfacing with third party IT systems used by external parties, such as Infrastructure Managers, Railway Companies and Terminals;
- Development of Datamart, a data warehouse that analyzes and correlates different data from sources such as local and national infrastructure.

OUTCOMES / LESSONS LEARNT

SIMA2 allows a significant reduction of the so-called “double” shunt in a convoy and helps to avoid the shunting of a single convoy more than once. Datamart makes it possible to cross-reference and query railway data with other organisations in the port information system.

RESULT PRAilway: a new software application



CHALLENGES

When loading the cargo on wagons, knowing and optimising the ratio of the load to the capacity of the wagon is a key factor. To calculate the use of wagons and loading plan, the operators of the Port of Rijeka (HR) were used to calculate the relationship using Excel files or a mere mental effort, with little knowledge of formal optimization models.

GOAL

Create a software application that can speed up the loading process and distribute the containers of a single shipment by displaying a wagon composition and ultimately increase rail transport productivity.

METHODOLOGY

The activity included software development, testing, education and daily use. Meetings with stakeholders were crucial in identifying technical data, business processes, application

requirements, application configuration and use cases.

OUTCOME / LESSONS LEARNT

The new PRAilway web application with adjusted mobile usability for Android and iPhone is accessible to users registered on the domain www.prailway.host.

The application is alpha and beta tested and can be used by all rail operators with granted access. PRAilway allows a more standardized and efficient loading process and its specifications can be used by other organizations with similar needs.

NEW WMS (WAREHOUSE MANAGEMENT SYSTEM) MODEL

NEW SERVICES PORT GATEWAY/FREIGHT VILLAGE

RESULT

Improved software application



CHALLENGES

Warehouse management has been progressively characterized by digital optimization of routine procedures and the synergies' identification and integration along the value chain, boosting the contract logistics sector and the application of multimodal transport solutions.

GOAL

Codognotto Poland aimed to elaborate a warehouse management system (WMS) able to allow a better exploitation of its warehouses' hub potentiality.

METHODOLOGY

The activity included consultation with different stakeholders, software development, testing, assessment and reporting.

OUTCOME / LESSONS LEARNT

The implemented WMS enables:

- focus on integrated management and execution of various logistical and

non-logistical functions in a complex portfolio of services;

- significant degree of individualization in the design and execution of these services;
- establishment of long-term relationship between customer and service provider by optimizing the integration of services.

This innovation consisted in using the physical hub as a point of data collection and sharing to implement the digital integration and ultimately the synergies with the players involved in the operations.

RESULT

Market study of new rail service



CHALLENGES

A high number of heavy vehicles transporting cargo are deployed on the road between Verona and Venezia, which leads to high levels of air pollution and traffic jams. By activating a new railway shuttle between the two nodes, a significant amount of freight could be moved from road to rail.

GOAL

While railway transport on long distances (> 400 km) has been fostered by Europe and has won the competition with road transport, the short distance between Verona and Venezia (about 120 km) required the development of a different solution, identified in a shuttle service.

METHODOLOGY

Assessment among all relevant operators – such as terminal managers, shunting operators, forwarders, railway undertakings and shipping companies

- through a survey that collected and analysed the information.

OUTCOME / LESSONS LEARNT

The environmental impact of the new service has a significant potential: in case of activation the traffic could be reduced by annually -8,424 trucks (equal to -7,160.4 tons of CO2/year).

The operative costs of implementation equal currently almost double of the road transport on the same stretch. A rail incentive to allow the implementation is currently under evaluation of the Veneto Region Council.

The creation of railway connections that include short distance across Europe would significantly limit the road freight transport of the so called last mile.

MODAL SHIFT FROM ROAD TO RAIL

RESULT

Test of new rail service



CHALLENGES

Codognotto Poland aimed to test a short-range railway service exploiting a block train already managed by Codognotto along the Adriatic Baltic corridor from Gliwice-PL to Piacenza-IT.

GOAL

To shift freight and cargo transport between the Baltic area belonging to Poland and the north west Adriatic region situated in Italy from road to rail.

METHODOLOGY

In order to test a modal shift of shipments managed by road, Codognotto established three pre-loaded wagons in Pordenone-IT and three pre-loaded wagons in Piacenza. A block train loaded in Gliwice stopped in Pordenone and collected the pre-loaded wagons, which were then transported to and unloaded in Piacenza. The same operation was then repeated in Piacenza. One of the last mile connections was successfully managed with LNG trucks

that contributed to reduce the carbon footprint of the equivalent road transport. Codognotto involved in the project two key customers (shippers) and its intermodal partners.

OUTCOME / LESSONS LEARNT

The test showed positive results from both an operational point of view as well as in terms of CO₂ emissions: compared to a full diesel transport option, the KgCO₂eq could be reduced by 49,1%.

However, the tested short-range railway service would lead to a price increase of approx. 25%-35%, compared to the same shipment offered by road. This explains the negative feedback received by the key costumers involved in the project. Necessary condition that would allow the transfer of this pilot activity to other territories would be to verify the presence of active sustainable railway service, to verify the potential short haul flows of goods along the train routes and to identify shippers with a positive attitude towards eco sustainable solutions.

NEW E-MOBILITY SERVICES IN THE FREEPORT OF BUDAPEST

RESULT

Pre-feasibility study e-mobility services



CHALLENGES

Last mile transportation in Budapest-HU significantly contributes to high traffic volume and high levels of air pollution and noise emission.

GOAL

To develop an intermodal logistics center for low-emission delivery in the Freeport of Budapest which would enable the big-scale deployment of e-mobility services in downtown Budapest.

METHODOLOGY

A pre-feasibility study was conducted in close collaboration with stakeholders (such as: Budapest municipality, transport companies, districts authorities, non-profit organizations, universities, private companies).

OUTCOMES / LESSONS LEARNT

The main results of the pre-feasibility study show that:

- there is still a low amount of suitable

- electric cargo vehicles in Budapest;
- the technology is not completely ready, especially in terms of range and capacity;
- there is a need for a fleet operator;
- the return on investment exceeds 10 years of depreciation, which could be shortened by subsidies or regulations;
- the involvement of the Municipality of Budapest is a key element because of the necessary regulations.

All stakeholders support the proposal for e-mobility. However, the study highlighted the complexity of the process. No concrete decisions have yet been taken on the implementation of the project.

The results of the pre-feasibility study can be used by other territories to analyse the feasibility of e-mobility services.

TEST OF ENERGY EFFICIENCY IN CARGO HANDLING

RESULT

Test of LNG deployment (compared to Diesel)



CHALLENGES

LNG is considered a more sustainable alternative fuel compared to standard Diesel. Yet, the high-scale deployment of LNG trucks is still challenging, mostly because of:

- a lack of adequate infrastructure, technological and commercial development
- a lack of a clear and harmonized policy at EU level
- higher costs of LNG trucks compared to Standard Diesel trucks

GOAL

Operating in this context framework, Codognotto Poland intended to study and verify the possibility to use LNG trucks for its road transport fluxes in central Europe.

METHODOLOGY

Codognotto performed in 2018 an international demonstrative transport mission with LNG and Diesel trucks.

The selected route from Lodz-PL to Leipzig-DE is 543 km long and involved stakeholders such as SCANIA, IVECO and UNILEVER.

The data collection related to the driving included the overall performance and fuel consumption of the vehicle and the emissions of both LNG and standard Diesel trucks; subsequently, the information collected have been compared.

OUTCOMES / LESSONS LEARNT

TalkNET was the first project testing LNG in Poland: the pilot highlighted a potential decrease of environmental emission of -12% KgCO₂eq compared to Diesel.

The pilot action has increased awareness of the usability of alternative fuels and promoted new market perspectives. Some Polish companies have already taken advantage of the case of use and overcome supply difficulties by creating their own filling stations.

RESULT

New lighting system in warehouse



CHALLENGES

The current lighting system of the port Luka Koper (SI) uses high pressure metal halide lamps that cannot be handled from remote. To increase the energy-efficiency as well as the working conditions, Luka Koper intended to test a new lighting controls system with occupancy sensors and energy-efficient lamps.

GOAL

One of the main goals at the port Luka Koper is to rationalize the costs for energy and become highly energy-efficient in regard of lighting of the terminal's warehouses.

METHODOLOGY

A new lighting system based on LED (light emitting diode) lighting sources was implemented in one of the cargo warehouses (no. 33) of the port. The solution operates on a fully automatic base with remote control or in a

standalone mode.

Existing metering systems were upgraded. Moreover, additional sub-meters for direct measuring of electricity consumption for indoor and outdoor lighting were installed.

OUTCOMES / LESSONS LEARNT

The implemented solution reduced the costs of electricity consumption up to -50%. It improved the existing light level/illuminance and the working conditions in the selected warehouse. Moreover, the LED based solution will require less maintenance than before.

The pilot has a high replicability potential within the port where there are about 2.200 lamps installed in the other warehouses.

A pilot site visit for stakeholders and project partners was organised in February 2020. The 26 participants agreed on the benefits of the solution and its transferability to similar environments.

TESTS ON TRANSPORT OPERATIONS

RESULT

Upgrade of older locomotives (more energy efficiency)



CHALLENGES

Freight trains on the track from Kufstein (D-AT) to Brenner (AT-IT) need up to 3 locomotives and 2 loc's drivers in order to manage the steep Northern Brenner track corridor.

GOAL

The aim of this pilot action is to upgrade older locomotives that run on the corridor with a time-multiplex control unit system. This would allow a driver to control up to 3 locomotives according to the master/slave logic, a model of asymmetric communication or control where one device or process controls one or more other devices or processes and serves as their communication hub.

The successful implementation of the system would have two main benefits:

- savings of working hours of locomotive drivers (as only 1 instead of 2 drivers is needed), that would represent a way to face the problem of a general shortage of locomotive drivers throughout Europe

- more energy efficient operational steering of the train due to: single control and a synchronous action of (up to) 3 locomotives in the trainset.

METHODOLOGY

The test period under commercial conditions is planned starting from August 2020. A technical comparison (before-after) will be conducted, in order to measure the impact of the new system.

OUTCOMES / LESSONS LEARNT

Especially the trans-alpine combined loading traffic with only a temporary increase in locomotive demand clearly gains in attractiveness and performance. More efficient track use, higher loads and lower costs are clear arguments in favour of this approach.

TESTING OF TRAINING PATHWAYS FOR ENERGY EFFICIENCY DEPLOYMENT IN THE RAIL SECTOR - RCH AND LOKOMOTION

RESULT

Development of 2 training pathways



CHALLENGE

The energy efficient train transportation is a priority task for the railway undertakings Rail Cargo Hungaria (HU) and Lokomotion (DE) because the fee of consumed electrical energy also increases the cost of transportation. Companies are eager to rationalize their costs, to increase competitiveness. The question of energy saving achieved during train transportation depends directly on the handling of the locomotive, namely the proper driving of the train.

Currently, eco-driving program is totally missing in the official, accredited training programs in Hungary.

GOAL

To promote eco-driving education for locomotive drivers, a new common training pathway was elaborated and tested.

METHODOLOGY

It consists of two parts:

- Theoretic foundation related to energy-efficient driving

- Exercise on a simulator to help implement the gained theoretic knowledge into practice.

In addition, LOK included another training pathway in its curricula regarding different regulations in DE, AT, and IT and particular challenges on steep and narrow alpine mountain tracks.

OUTCOMES / LESSONS LEARNT

The training pathway can serve as a model for all European railway companies. On the short term, a significant cost reduction can be achieved thanks to proper driving behavior. Also, the eco-consciousness can further distinguish operators in the market. One major challenge in Hungary is that financial resources are missing (mostly in regard to simulators) to implement the program on a bigger scale. The additions in the curricula developed by Lokomotion enable an interoperability of train drivers between DE, AT, and IT (as they are educated about differing regulations). This will reduce the stopping time of freight trains at borders and increase the overall operational flexibility.

CONCLUSIONS

If you hear about strengthened cooperation among freight transport stakeholders in central Europe, you will be hearing about the TalkNET project.

This is the main challenge and the main goal that the project has achieved, making logistics nodes more efficient and environmentally-friendly, supporting the implementation of

new multimodal services and eco-innovation investments and setting up a transnational cooperation policy framework in the central Europe area.

This area represents a strategic and most significant economic region in Europe, that can support the increase of trade and sustainable competitiveness of the whole Europe.



NEXT STEPS

The journey we embarked on with TalkNET three years ago now allows us to look to the future again based on the great results we have achieved.

In particular, the transnational cooperation we have established will bring to a fruitful capitalisation of the project outputs that we have developed.

First of all, there is a need to link especially peripheral regions to the nodes of the TEN-T Core Network Corridors (CNC), to remove bottlenecks and to bridge missing transport links in order to ensure good accessibility across central Europe.

In addition, the EU Green Deal aims to reduce transport emissions by 90% by 2050, which requires smart and sustainable approaches to cross-border mobility, intermodality and the introduction of IT-supported mobility management solutions.

After the experience within Interreg TALKNET, we deem important to focus on the following issues and challenges:

- connecting central Europe regions to the EU transport corridors
- improving regional sustainable transport and accessibility
- removing cross-border transport barriers and completing missing links
- developing transnational logistics chains.

For this reason, we do call for the next Interreg CENTRAL EUROPE 2021-2027 to keep Transport as one of its “funding priorities” to contribute to a Sustainable, Smart and Seamless European Transport.

Multimodal transport is a product of cooperation, so we look forward to new Interreg CENTRAL EUROPE projects for more sustainable development of our territories.

TalkNET Partners



Responsible for the content

**ITALCAM – ITALIENISCHE HANDELSKAMMER
MÜNCHEN-STUTTGART E.V.**

Präsident: Annamaria Andretta

Landaubogen 10, 81373, München (DE)

Telefon: +49 89 96166170

Fax: +49 89 2904894

info@italcam.de

www.italcam.de


About the TalkNET project:

www.interreg-central.eu/TalkNET

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Playlist

Design

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Stand
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