OUTPUT FACT SHEET

Pilot actions (including investment, if applicable)   Version 2

Project index number and acronym	CE1044 TalkNET
Lead partner	North Adriatic Sea Port Authority
Output number and title	O.T3.2 – PA for multimodal nodes/terminals efficiency and optimization: innovative control shunting system
Investment number and title (if applicable)	
Responsible partner (PP name and number)	LP North Adriatic Sea Port Authority
Project website	https://www.interreg-central.eu/Content.Node/TalkNET.html
Delivery date	August 2020

Summary description of the pilot action (including investment, if applicable) explaining its experimental nature and demonstration character

The object of the pilot action implemented by NASPA aiming at innovating the control shunting system is focused on the creation of a data warehouse functional to reporting and data analysis, called Railway DATAMART.

This data warehouse has been implemented for the organization of different datasets allowing integrated queries and researches, based on data arising from different data sources and different data types. In particular, the Railway DATAMART allows the collection of the data from ERF (Esercizio Raccordi Ferroviari) - the Single Shunting Operator in Venezia Marghera Scalo Railway District - that arrive to the North Adriatic Sea Port Authority for data analysis. In fact, DATAMART is linked to SIMA2 Integrated System for the Management of the Railway Shunting - SIMA2 (pilot action of TalkNET project): data of shunting operations from SIMA are transferred and stored in the DATAMART, allowing a further elaboration of the data collected above all for analysis and statistic purposes that will allow to increase monitoring for management efficiency of the systems.

 It's the first time that such a data warehouse is implemented in the port of Venice and is useful to give the overall view of the logistic movement of goods through the port.

There are four main levels in the architecture of the this database:

1. *Level of sources.* The Data Warehouse uses heterogeneous data sources, which can be extracted from the production environment and therefore originally stored in relational corporate databases, or come from information systems external to the company.
2. *Power level.* The data stored in the sources must be extracted, cleaned to eliminate inconsistencies and complete any missing parts. The so-called ETL tools (Extraction, Transformation and Loading) allow to integrate heterogeneous schemes, as well as to extract, transform, clean, validate, filter and load data from the Data Warehouse sources.
3. *Warehouse level.* The information is collected in a Data Warehouse. It can be directly consulted but also used as a source to build data mart.
4. *Level of analysis.* It allows the efficient and flexible consultation of the integrated data for the purposes of drafting reports, analyses and simulations.

Results:

- It allows to cross-reference and query railway data with the other organizations of the port information system.
- It allows a real time (daily base) monitor of goods transit in and out from the Port of Venice and it adds an overall view of the Port's railway systems usage.
- It increases the possibility to correlate data from different sources that means having the ability to generate new information, improve process optimization and decision support, and perform more accurate processing on historical data.

DATAMART has been tested, but it is not fully operative currently, as the pandemic has slow down several processes. Anyway, a first transfer of data has been carried out allowing to start its activity.

NUTS region(s) concerned by the pilot action (relevant NUTS level)

NUTS 2 - Veneto Region (IT)

Investment costs (EUR), if applicable

Expected impact and benefits of the pilot action for the concerned territory and target groups and leverage of additional funds (if applicable)

The main challenge that brought to implement this pilot action is to have a unique collection of different data sources for different activities (gates, rail activity, shipping activity, geographical data) in order to carry out quieries and have additional information from the intersection of the data bases.

A concrete example is related to the possibility to better understand intermodality in the port: the ship arrives, drops off cargo that is distributed through rail operations/network, trucks (gates) or other ships. Currently the segmentation of the different databases don't allow to know the volumes of traffic that are generated from the incoming ship towards the three modalities – rail, road, sea.

As the Port of Venice is connected to the national network through the Venice Marghera Scalo port and through the Venezia Mestre station, the expected impact and benefits for the concerned territories and target groups is the assurance of an efficient railway accessibility. To tackle this challenge, further to some infrastructural interventions (new railway bridge, upgrading of Venezia Marghera Scalo station capacity, upgrading of railway siding in the port area), NASPA realized, within TalkNET project, two pilot actions (SIMA2 and Railway Datamart) aimed at optimization and effective management of railway shunting operations.

The recent rail traffic growth leads to suppose that the trend is structural. The Port of Venice represents one of the most important port and logistics systems in the Adriatic. Due to its strategic position, it represents an increasingly strong link in the logistics chain between Central and Eastern Europe on one side as well as the East Mediterranean, the Middle East and the Far East on the other side.
This will allow to play a relevant role as a gateway and logistics service provider to the North of Italy and more specifically the Eastern Lombardy, and other international destinations, such as Central and Eastern Europe (e.g. Southern Germany, Austria, Switzerland, etc). All the relevant regional and international stakeholders will benefit from the improved logistic efficiency.

Sustainability of the pilot action results and transferability to other territories and stakeholders.

The financial sustainability of this new app will be guaranteed with public funds by the North Adriatic Sea Port Authority. Moreover, it will be integrated and increased with new functions as the centralizations of internal datasources like georeferenced assets or ongoing and upcoming projects.

. Therefore, the financial sustainability will involve both the evolution of the DATAMART and its manteinance.

DATAMART is of strategic importance for the digitalisation system of data management in the port.

The political and institutional sustainability is assured by the fact that DATAMART is also linked with the Port Community System - Logis System "single window" of the port of Venice) that provide a huge collections of ship-related data, along with load and unload operations.

Capitalisation perspectives can be considered in relation to the fact that the added value of DATAMART is a technological upgrade allowing a related improvement on the quantity of information gathered and available to be analysed. The transferability of the system created by the Port of Venice allows an organization to acquire data from different sources (other organizations that use data in different forms): the cost-benefit analysis of the service results particularly economically viable when applied to huge and complex nodes; thus the system is suitable for all large terminals. In particular, the transferability of the system allows an organization to acquire data from different sources (other organizations that use data in different forms), to exchange them each other without forcing those who provide these data to change their data management and storage methods.

Lessons learned and added value of transnational cooperation of the pilot action implementation (including investment, if applicable)

The development of pilot actions has allowed to enhance the process of mutual learning and share capitalisation of the results achieved. The assessment of pilot results have been carried out in ad hoc Working Groups (27-28 May 2020) and in relation to DATAMART pilot action, the following aspects have been shared and exchanged from an innovation point of view at transnational level.

Strengths of the pilot action:
- Increased accuracy of historical data processing: different data sources mean more explicative variables that allow better comprehension of local and global markets needs and fluctuations.
- Provides competitive advantage, streamlines the flow of information, generates cost savings, delivers enhanced business intelligence;
- Automated data collection and faster data processing leads to an increased capability of delivering powerful insight on the logistic demand or distribution bottlenecks;
- Collected data can be used for better organization:
- The datamart offers the advantage of data-driven decision-making. Moreover, it increases the predictive modelling capability of the ports that enables what-if analysis of different scenarios. Better decisions improve operational efficiency and gain competitive advantages.

Among the critical points, it has been highlighted that time and costs are necessary to standardize data, maintenance costs can outweigh the benefits, risk of system failure in case only a few operators adopt the system, as sufficient source of data must be assured in order to benefit from cross-referencing and therefore a cooperation of many partners is necessary. Further, the risk of data leakage.

In terms of transnational applicability, the cost-benefit analysis of the service results particularly economically viable when applied to huge and complex nodes; thus the system is suitable for all large terminals. In particular, the transferability of the system allows an organization to acquire data from different sources (other organizations that use data in different forms), to exchange them each other without forcing those who provide these data to change their data management and storage methods.

This is confirmed by other ports that are facing quite similar challenges, like the port of Trieste, Koper and Rijeka, that are planning to expand and invest in further railway capacities and operations, and the functionalities of such a tool could be replicated in order to strengthen the digitalisation of systems that need to be interfaced.

Contribution to/ compliance with:
- **relevant regulatory requirements**
- **sustainable development – environmental effects. In case of risk of negative effects, mitigation measures introduced**
- **horizontal principles such as equal opportunities and non-descrimination**

Relevant regulatory requirements:
- EU Strategies and perspectives of digitalization & automation in Transport & Logistics
- The Agenzia per l'Italia Digitale - Agency for Digital Italy (AgID), the technical agency of the Presidency of the Council of Ministers. The main purpose of the Agency is to guarantee the achievement of the Italian digital agenda objectives and contribute to the diffusion of information and communication technologies, with the aim of fostering innovation and economic growth.

References to relevant deliverables (e.g. pilot action report, studies), investment factsheet and web-links
If applicable, additional documentation, pictures or images to be provided as annex

The deliverables used to produce the action plans are:
- D.T3.1.1 Meetings to involve key players of freight transport;
- D.T3.2.2 PA for multimodal nodes/terminals efficiency and optimization: innovative control shunting system
- D.T. 3.2.3 PA for multimodal nodes/terminals efficiency and optimization: ICT/ITS tools for rail traffic
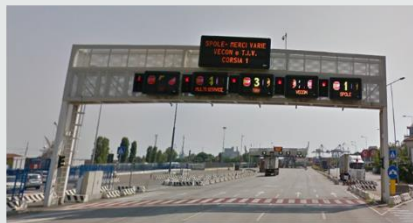
Haulage gate in/out datasets

Stored on local database
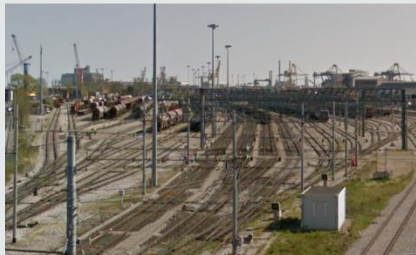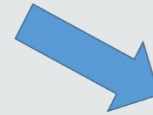
Rail shounting datasets

Stored on local database

All other port data sets (freight, AIS, Nautical, documents, …)

DATAMART

Datamart organizes different datasets allowing integrated queries and researched based on data arising from different data sources and different data types.