ACTION PLAN TO IMPROVE MULTIMODAL NODES EFFICIENCY AND CONNECTIONS – TRIESTE (NAPA)

Last mile connectivity, node management optimisation, multimodal services

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Executive Summary

Having regard to the current exceptional port traffic positive growing trend, the Port of Trieste is focusing on its multimodal related infrastructures and management procedures to adapt their functions to incorporate inland node terminals, utilising existing inland facilities and designing innovative solutions able to ensure additional advantage in terms of port connectivity.

In order to achieve this goal, various policy initiatives and a substantial amount of investment in port capacity, both from the perspective of management optimization and infrastructure expansion has been and will be undertaken in the next few years.

The following table shows the SWOT analysis identified by the Port of Trieste:

SWOT	Negative	Positive
Internal	• Obsolete infrastructure serving the last mile route • Lack of coordination and communication among operators at node level dealing with the "last mile" route	• Geographic position: proximity to Central and East European markets • Efficient connection from the node to the national railway line and to the TEN-T networks
External	• Increase of traffic flows in the next 15 years - potential congestion • Competition among different operators at regional and national level • Lack of funds in the upgrade of the infrastructure	• Increase of traffic flows in the next 15 years • Future investments on the existing infrastructure through European and national funds as foreseen in the port Masterplan

Accordingly, the Port of Trieste has identified two actions to be taken as to tackle the weakenesses here above:

1) Investment in the Port railway infrastructures

Railway traffic has significantly increased over the last few years, becoming the first Italian port of railway transport, reaching almost 10,000 trains/year and with a modal share for containers of 50% rail and 50% road.

In order to accommodate this increasing trend, the Port of Trieste intends to invest on its railway last mile infrastructures, through EU funds (project TriesteRailPort, co-funded by the CEF Programme), loans (a 39-mln contract was signed in December 2019 with the EIB) and own funds.

2) Improve digital connectivity

The upgrade of physical infrastructures is a medium and long term goal, requiring considerable amount of funds. In the meantime, the Port of Trieste is also investing in the enhancement of its digital connectivity both with regional and Central European inland terminals and relevant stakeholders, such as railway undertakings, the main tool being its Port Community System (PCS). The specific objective is to streamline the entrance/exit of trains by digitalising all the train-related information of the whole supply chain, allowing the optimisation of the existing infrastructures while they are being upgraded.

2. Cluster 2 – Multimodal nodes optimization: overview of the needs and good practices in cooperaion with stakeholders to develop the action plan

All in all, the main need of the Port of Trieste is to move from being one separate node in the global supply chain, to the pivot of a Proximity Terminal Network (PTN), thus building new relations with neighbouring and distant terminals.

In fact, In the normal situation, terminals compete each other to position themselves on the market.

In 2013, Rodrigue[1] defined the concept of transport terminal "hinterland": "Each transport terminal has its own hinterland (or "natural" hinterland), representing a set of customers (distribution, manufacturing and retailing activities) with whom it has transactions. These transactions involve movements of freight (…) that at some point will be transhipped by the terminal. Movements are either originating or are bound to a space that can mainly be categorized as the main hinterland and the competition margin."

Also, the concept was illustrated in the figure below as follows: two terminals, A and B, compete for customers in their competition margin. An island as catchment area for a terminal within the hinterland of another terminal can also exist, mainly due to privileged relationship between the terminal and a client and/or because of efficient inland distribution system serviced by a specific transport corridor.

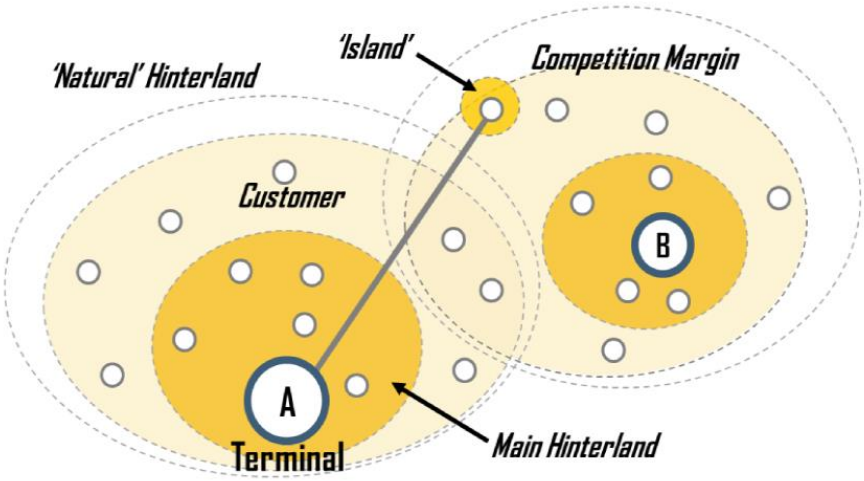


Figure 1 - Hinterland of an Intermodal Terminal [Source: Rodrigue, 2013]

Therefore, a Terminal Network can be seen from the physical point of view as being defined by the location of freight nodes (terminals) and the linear transport infrastructure connecting them; also, the connecting services between the terminals are also added.

Starting from this, a "coopetition" model can be defined to enable both fair competition and cooperation among terminals.

Such a model can be named as "Proximity Terminal Network" – PTN for short – of a terminal.

The PTN involves the exploitation of the capacity of a terminal in cooperation with other terminals located reasonably close to it from a geographical perspective. A "reasonable" geographical distance

[1] Rodrigue J.P.(2013) The Geography of Transport Systems, Routledge.

implies that common services can be built and offered to the market in a consolidated way among the PTN-terminals, thus having as ultimate goal to optimize the capacity usage of their available resources. Such services could include both node and line services, i.e. maintenance and repairing, ITU handling, cargo bundling to profitably operate rail long distance transport.

The main challenge in the development of an efficient PTN is the ability of exploiting the resources available in the various terminals at their best, thus including freight transport, equipment maintenance, etc.

First, to bundle sufficient cargo flows together and make the rail transport and handling service cost effective, while at the same time offering reliable and frequent service, road transport alone is competitive in the PTN context. The emphasis should be on direct terminal to terminal shuttle services leaving collection and distribution completely to the road sector. Consolidation of freight flows on a PTN contributes to more profitable intermodal transport system, enabling rail services from a PTN terminal to external destinations.

The feasibility of this system depends on the number of terminals in the proximity. A dense terminal network reduces first and last mile road transport costs. On the other side, the length of freight trains has to be shorter which makes the rail transport costs per TEU too high.

Currently, small intermodal flows are mainly allocated by road transport. These flows have their origin or destination in peripheral regions of terminals in a cluster's PTN. It is needed to find the possibility of implementing innovative bundling models in order to integrate small flows in the intermodal system. Synergy and consolidation of flows within PTN of a cluster would result in reduction of costs and improving the quality of intermodal service.

On the other side, consolidation of flows between terminals implies additional transhipments and detours for freight flows. These transhipments increase both operational time and costs. Therefore, complex consolidation network of terminals in proximity requires complex operations. In order to fulfil these requirements, terminals must be capable of executing fast and efficient operations that result in minimum time for transhipment. On this way, the market share of intermodal transport could increase and the connection of the regions gravitating to logistics clusters could improve. Efficient consolidation of flows and better connection to a range of possible origins and destinations could also attract additional transport volumes.

Past solutions

The Legislative Decree no. 169/2016 reforming the Italian port sector envisages that the President of port authorities can seek integration and a common governance with inland platforms.

In the case of Trieste, the Port of Trieste has acquired competence over the Port of Monfalcone. Moreover, it is the second shareholder of the RRT of Trieste, which controls also the RRT of Cervignano.

These recent developments show the willingness of the port of Trieste to play a pivotal role in the regional logistic systems. Also, the Three-year Operational Plan envisages the creation of a new integrated railway service system with the other regional logistic nodes with the aim of creating an “integrated logistic system” at regional level, optimizing existing infrastructures, able to offer competitive services as an integrated “continental gateway”. Currently, an ongoing study commissioned by the FVG Region is assessing new governance structures able to provide such an institutional framework.

Best practices

A list of PTN management best practices include:

1. RailPort project (Rail Freight Shuttles to the Port) which represents successful initiative for

increasing the connectivity between seaport logistics cluster (Port of Gothenburg - PoG) and surrounding regions[2]. The aim of the RailPort project is to increase the number of containers transported by rail to and from the PoG by establishing an innovative system of rail shuttles for inland transportation which should result in 50% of railway share to and from the port by 2020 (comparing to 2000). A network of intermodal transhipment terminals allows smooth coverage for rail shuttle services from a journey's start to finish. Demand for every rail shuttle is guaranteed through cooperation with several shipping companies, forwarding agents, and commodity owners. RailPort system enables efficient transport between PoG and inland terminals with rail at lower cost for all import and export companies. As a result, PoG have expanded their catchment area to major regions in Sweden, Norway and Denmark.

2. Brabant intermodal[3] is a good example of regional cooperation between different stakeholders in a PTN of logistics cluster Rotterdam-Antwerp-Duisburg. Four terminal operators cooperate by bundling cargo flows to optimize intermodal transport and provide optimized solutions for customers.
3. One example for developing the PTN management is HIL - Intermodal and Logistics Hubs ("Hub Intermodali e Logistici") (a joint business initiative established between Terminalitalia (daughter company of FerroviedelloStato Holding) and Gestione Servizi Interporto (daughter company of the Interporto Bologna Holding)[4]. The HIL acts as a single actor responsible for the logistics integration of all links in the transport chain and for the management of full package of the intermodal terminal services. The objective is to enhance synergies and integrate services in proximity, to increase the reliability and offer smart value added services for the entire supply chain. The Bologna Intermodal terminal, together with the Parma (Castelguelfo) one, are going to be the set of terminals part of the network in which HIL will perform its innovative business and operational plan. The HIL pillars are the management of the Hub terminal services (handling, inspections, maintenance & repairing of loading units, maintenance for Railcars, pre-carriage, VAS, etc..) together with very focused services for the enhancement and optimization of mobile assets and synchronization with logistics operations. The link between them will be the search for synergies and cooperation in the context of the freight transport and along the logistics chains aimed at broadening the range of services to support a more coordinated 'rail-road' integration. HIL aims to provide a clear response to the market of railway freight transport for which the "handler of the railway services of the last mile" plays now a strategic role along the supply chain, capable of promoting synergies and collaborations. The HIL core activities will aim to standardize and optimize the management of the railway operations and handling services within the Hubs of reference and in parallel seek to satisfy the new requirements of the novel supply-chain.
4. The Interporto Bologna container terminal has joined Inland Links - an online platform for container terminals in the hinterland offering intermodal services to/from Rotterdam. In addition, the platform contributes to the increase in intermodal transport via inland shipping and rail of container flows – the volume of which is expected to triple over the next 25 years. Inland Links, an initiative of the Port of Rotterdam Authority, was launched two years ago in partnership with the Association of Dutch Inland Terminal Operators (VITO). The online intermodal platform was formed in 2011 and is the first to chart more than 50 hinterland terminals in The Netherlands, Belgium, Germany and other European countries[5].

[2] http://www.dac.dk/en/dac-cities/sustainable-cities/all-cases/transport/gothenburg---a-greener-solution-to-freight-transport/

[3] http://www.brabantintermodal.com/

[4] http://www.terminaliitalia.it/cms-file/excels/terminaliitalia/HIL_intern_press.pdf

[5] https://www.portofrotterdam.com/en/news-and-press-releases/ect-inland-terminals-join-inlandlinks

The example of Gothenburg is the most interesting for the Port of Trieste. In particular, the works on the port railway infrastructures that will take place until 2023 in the framework of the TriesteRailPort project, co-funded by the CEF Programme, requires to find alternative ways to accommodate the increasing number of trains. Against this background, shuttle services to/from the RRT of Cervignano might be the optimal solutions as to avoid congestion, delays and support the port's competitiveness.

2.1 Action: Upgrading and improving multimodal nodes and connections in the core port of Trieste

The present chapter is dedicated to the Action Plan and it will go more into detail on the main objective of the Port of Trieste concerning multimodality. Based on the previous section contents related to the Knowledge Tools and the analysis carried out on the 4 identified PTN based best practices, the following sections will translate the key factors described above into useful practical moves and replicable steps able to meet the needs of the Trieste maritime industry domain.

More specifically, after a description of the peculiarities of the Port of Trieste with relevant statistical data, we will provide an explanation of the main characteristics of the current multimodal framework of reference, which is linked to the utmost importance of the 4 PTN selected best practices in consideration of their demonstrated capability in addressing all relevant multimodal framework optimization perspectives adopting a multilevel active stakeholders cooperation/coordination approach.

2.2 Main challenges tackled

The main challenges the Port of Trieste faces with regard to multimodal node efficiency and connections relate to adapting the physical and non-physical infrastructures to the growing intermodal transport:

1) Upgrade of the railway (last mile) infrastructures
2) Optimizing existing infrastructures through ICT tools
3) Working with the other ports and RRTs as a network

Over the last few years, the Port of Trieste has enjoyed growing trends in the maritime and railway services.

	2015	2016	2017	Δ % 2015/2017	Δ % 2016/2017
TOTAL THROUGHPUT	57,124,772	59,244,255	61,955,405	+8.46%	+4.58%
Liquid Bulk	41,286,761	42,756,341	43,750,555	+5.97%	+2.33%
Dry Bulk	1,607,232	1,971,001	1,639,595	+2.01%	-16,81%
General Cargo	14,230,779	14,516,913	16,565,225	+16.40%	+14.11%
Number of Vehicles	301,353	302,619	315,705	+4.43%	+3.99%
Number of containers (TEUs)	501,144	486,462	616,156	+22.95%	+26.66%
Total TEUs (CTNRs, vehicles)	1,165,033	1,158,1329	1,314,953	+12.87%	+13.52%

Table 1 - Port of Trieste: statistics 2015-2017

Unlike the other Italian ports, the Port of Trieste does not serve mainly Italian regions, but Central European markets, as it can be easily noticed from the following figure, showing intermodal connections with O/D in the Port of Trieste:

In fact, the port of Trieste is the first Italian port for intermodal connections, with more than 200 trains a week connecting Trieste port to the Italian North-East industrial sites, Belgium, Luxembourg, Germany, Austria, Hungary, Slovakia and Czech Republic, totalling 8,681 trains in 2017.

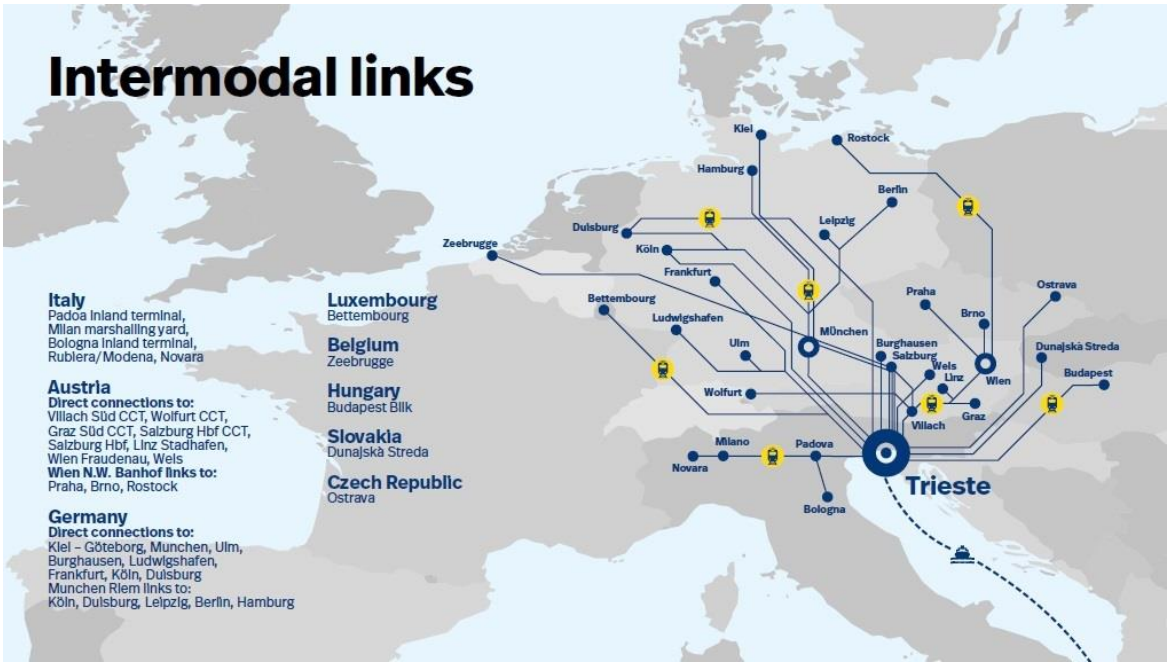


Figure 2 - Port of Trieste - intermodal connections

The Port of Trieste considers multimodal connections as an essential competitive advantage of the Port of Trieste.

Despite this stark increase in rail transport, railway infrastructures within and outside the port of Trieste have not been upgraded accordingly, leading to a potential congestion in the coming years.

The Port of Trieste has elaborated a so-called “Global project”, comprising four main sections:

1. Upgrade of the railway last mile connection;
2. Infrastructural upgrade for the reactivation of the railway line connecting Aquilinia station to Campo Marzio;
3. Upgrade of the existing infrastructure and new railway station at Scalo Legnami;
4. Infrastructural and technological upgrade of the port marshalling yard connecting Piers 5, 6 (RoRo transport) and 7 (containers) to Campo Marzio Station and then to the national railway lines.
   (piano finanziario riportato nel nuovo capitol dedicato a seguire)

These infrastructural works will be completed within the next 5-10 years. Meanwhile, the Port of Trieste aims to use of applied and customized IT solutions to increase the railway capacity by making administrative operations faster and automated.

In fact, the management of port-related supply chains is challenging due to the complex and heterogeneous operations of the ports with several actors and processes. This is particularly true with respect to the multimodal transport setting, which implies the management and control of port-related sea and inland traffic sectors throughout the interaction/coordination between different type of business actors. In fact, the cooperation of every actor in multimodal transport chain is of vital importance for efficient cargo movement while, at the same time, each actor has its own procedures and priorities (for example under the perspective of legal or economic aspects).

In line with the priorities set out by the Commission for the establishment of an EU fully integrated multimodal transportation system, the Port of Trieste recognizes the development of ICT and digitalization as a crucial mean to face the challenges associated to enabling optimization of the port management system and integration of multimodal nodes and services.

The pivot of this approach is the PCS – Port Community System – of the Port of Trieste, called Sinfomar.

The use of ICT tools is even more important if one considers the latest changes in the governance of regional ports and RRTs.

Figure 6 - Ports and RRTs in Friuli Venezia Giulia

The Italian port reform (2016) transformed “port authorities” into “port network authorities”, implying that ports should better integrate with inland terminals.

The Port of Trieste now has full competence on the port of Monfalcone. Moreover, it is the second shareholder of the RRT of Trieste which, since December 2018, also controls the RRT of Cervignano.

All in all, over the last few years the Port of Trieste has gained competence on one port and two RRTs.

This new situation implies a change in the mindset of policy makers and operators alike.

A shift from individual platforms often competing to one another to integrated platforms in "Proximity Terminal Networks" (PTNs) has to be realized, in order to optimize the use of existing infrastructures and gain the critical mass that the Friuli Venezia Giulia Region has been lacking.

The Port of Trieste will tackle this challenge by extending its PCS to the Port of Monfalcone and by developing interoperability mechanisms with the RRTs of Trieste and Cervignano, but also with the other two regional RRTs (Pordenone and Gorizia).

2.3 Results to be achieved

The Port of Trieste aims to achieve the following results:

1) Upgrade the railway (last mile) infrastructures
   This medium and long-term goal plans to pave the way for further growth in cargo trains up to 20,000/year
2) Extend the scope of the Port Community System
   This goal aims to create seamless freight flows by reducing time due to administrative procedures thanks to automated EDIs.

2.4 Tasks to be performed

As for multimodal nodes efficiency, the Port of Trieste will first undertake the necessary tasks to face the most relevant needs from the perspective of upgraded relevant infrastructures. The Port will afterwards deal with the obstacles that could be successfully overcome with ICT related tools deployment. All these two main domains and related tasks will be linked with the multilevel active stakeholders cooperation/coordination approach, which is recognize as critical to effectively achieve the objective of removing bottlenecks on the existing infrastructures and harnessing the full potential of ICT for Trieste multimodal freight transport optimization.

Based on the current situation analysed within D.T1.2.2 and the challenges described here above, the related actions are listed here below:

1) Upgrade the railway (last mile) infrastructures through the implementation of the Global project:
   a. Upgrade of the railway last mile connection in Campo Marzio station;
   b. Infrastructural upgrade for the reactivation of the railway line connecting Aquilinia station to Campo Marzio;
   c. Upgrade of the existing infrastructure and new railway station at Scalo Legnami. Although for this action no financial provision has been made, it is the most important in the long term, since it would serve the new "Logistic Platform" to be inaugurated at the end of 2019 and the new Pier no. 8, to be constructed by 2025;

d. Infrastructural and technological upgrade of the port marshalling yard connecting Piers no. 5, 6 (RoRo transport) and 7 (containers) to Campo Marzio Station and then to the national railway lines.

2) Extend the scope of the Port Community System:
   a. Extension of the PCS to the Port of Monfalcone and, in the long term, with Porto Nogaro;
   b. Development of EDIs with the RRTs of Cervignano, Gorizia and Pordenone;
   c. Development of EDIs with foreign RRTs;
   d. Development of EDIs with the RUs serving the Port of Trieste;
   e. Testing blockchain technologies.

The following pages detail the most relevant and mature action of the two categories described here above.

Upgrade of the railway last mile connection in Campo Marzio station

Piers no. 5, 6 (RoRo) and 7 (containers) are connected to the national railway line through the port marshalling yard to "Campo Marzio" station, managed by RFI SpA, the national railway network manager, and generate most of the port's railway transport. Therefore, it is the most strategic and sensitive part of the port railway network, affecting the overall port efficiency.

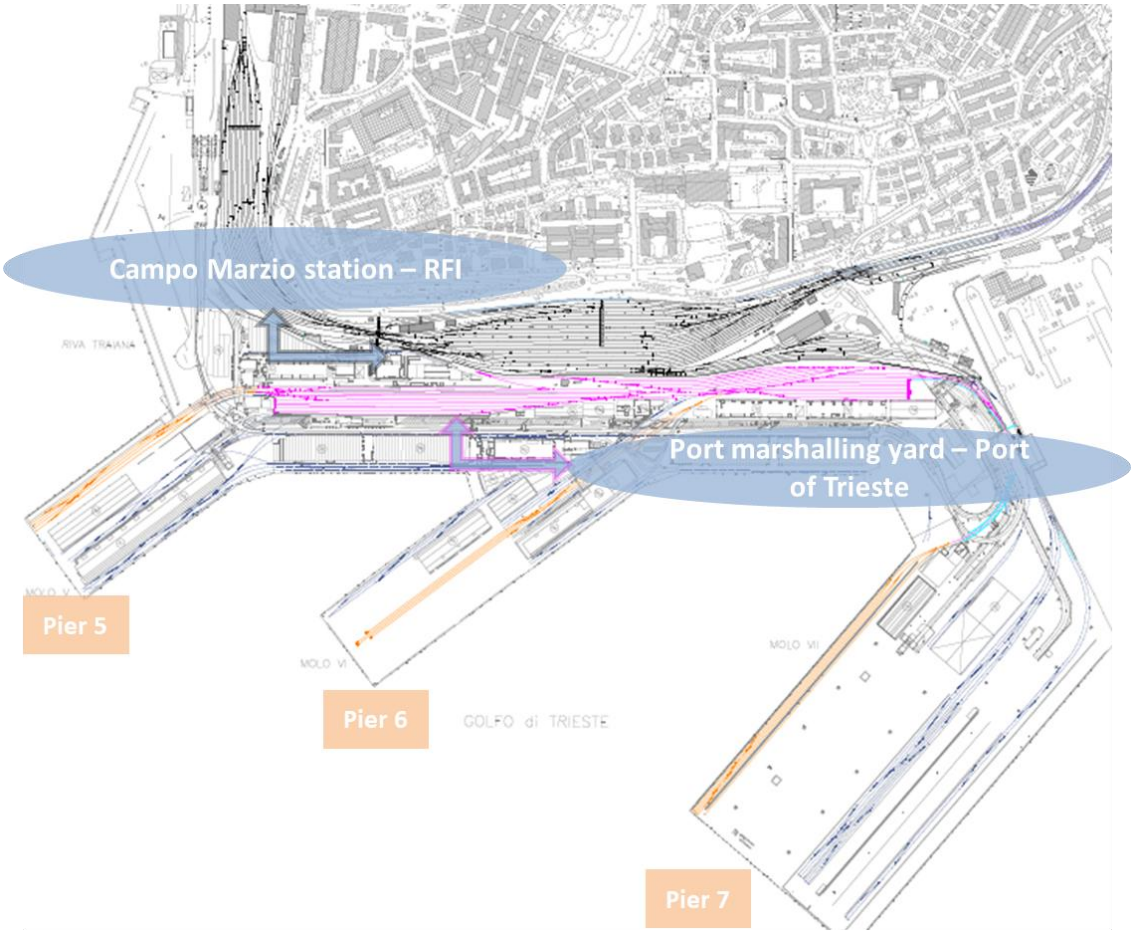


Figure 7 - Layout of the Campo Marzio Station

In fact, the current railway layout of both the Campo Marzio station (in black) and the railway sidings managed by the Port of Trieste (fuchsia) hinders the further development of intermodal transport to/from the port:

1) the train length is currently limited to 550 metres, while EU Regulation 1315/2013 requires the Core network corridor accommodate freight trains of at least 740 m long;

2) it does not allow trains to operate simultaneously from the three port terminals, forcing the other two to stand still when one of them uses the railway sidings managed by the port;
3) the manoeuvres of the marshalling yard are not automated, causing delays and posing higher risks to the safety of the operations due to human errors.

The Italian government has already allocated 50 million euros to RFI S.p.A. for the upgrade of the Campo Marzio station, but not for the Port of Trieste and its marshalling yard.

This action, part of the Global Project, foresees works dedicated to improve the hinterland accessibility and therefore multimodal connections of the Port of Trieste, eliminating bottleneck that would occur should it not implement the upgrade of its own railway infrastructures in the marshalling yard, thus enabling the growing trends of railway traffic to/from Central and Eastern Europe.
Works will be divided in three main activities, as outlined below in more detail:

1) Upgrade of the railway infrastructures of the Campo Marzio Station – port shunting area

   This activity comprises the most relevant actions necessary to overcome the above-mentioned bottlenecks and foresees infrastructural works to change the current layout of the port shunting area

2) New signalling system

   Full automation of the manoeuvres and full coordination with the automated system used by RFI S.p.A.

3) New soft infrastructures

   Adoption and installation of soft infrastructures (SW and HW) to ensure interoperability with all relevant stakeholders, i.e. the Port Community System of the Port of Trieste, RFI S.p.A, Customs Agency, terminal operators, railway shunting company, MTOs, inland terminals/RRTs, railway undertakings.

This Action will be carried out in close coordination with RFI S.p.A., in order to minimise the impact on the daily operations of Piers no. 5, 6 and 7.

Development of EDIs with the RUs serving the Port of Trieste

The train module of the PCS is responsible for managing trains arriving or departing from the Port of Trieste and is fully integrated with the other modules involved in rail traffic. In particular, it is synchronized with the Ship Module thanks to the fact that the port railway gates have been equipped with cameras using an optical reading system for controlling purposes when trains are arriving and exiting the Port areas and simultaneously recognizing ILU codes for rolling stock, BIC for containers, UIC for wagons.

On January 1st 2018, a further step was taken in the dematerialization of control and authorization operations for the railway traffic, equalizing the movement of trains to that of ships and standardizing the customs, logistical and security management through the automatic generation of arrival and departure notice documents.

To allow the complete tracking of a container / vehicle / or goods arriving and exiting by train from/to the Port areas, the railway carrier, or its representative, must present a customs formal manifest related to the transported goods using a specific formal declaration model called ‘Model CH30’.
This process involves primarily the following different operators

- Railway companies and shunting companies;
- Multimodal Transport Operator;
- Terminal operators;

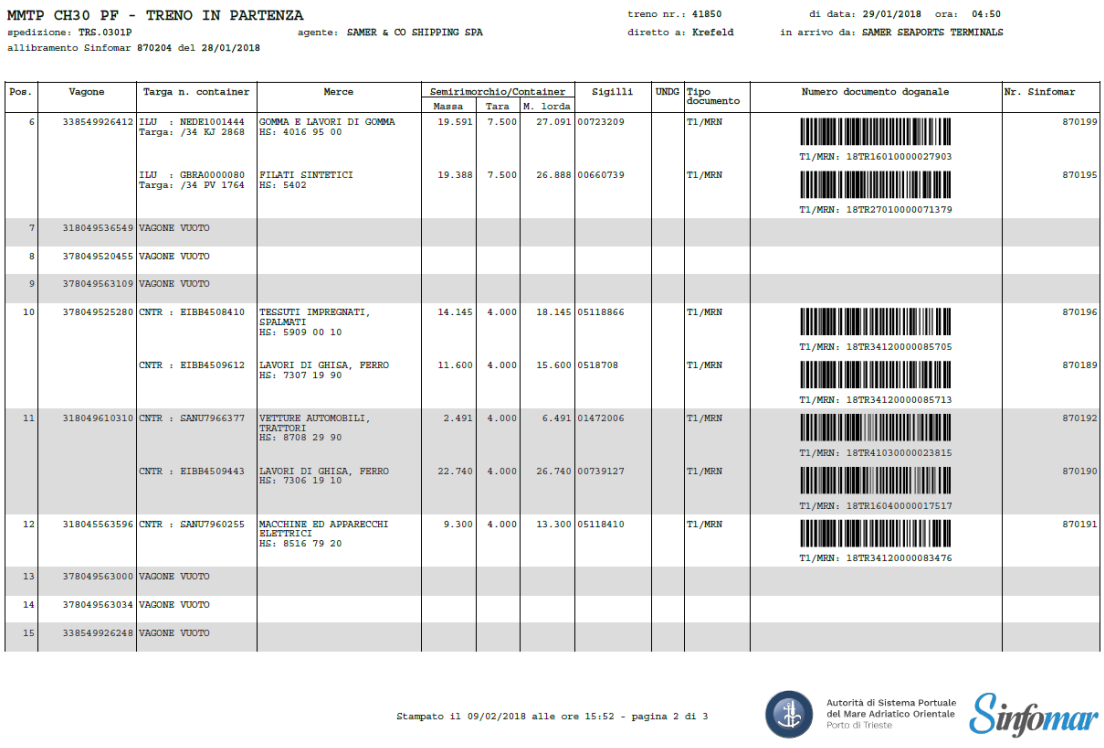
- Train agents and shippers;
- Custom Agency and Financial Police.

In the past, the Port of Trieste used 13 different models of CH30 with non-standardized data and which were also not comparable between them. Today the 'Sinfomar' allows to generate a unique CH30 in a single format agreed with the operators and the Customs according to objective criteria, and prepared using a shared terminology and structure.

This standardization has led to excellent results, with the almost total elimination of errors, and a considerable advantage in the flow of the interchange of data between various operators, public and private, as well as the near elimination of subjective interpretations of the data.

The presence of barcodes containing the customs formalities, such as the MRNs of the Train Freight Manifest, allows customs operators to close the consignment of goods on AIDA through the use of a manual scanner, thus reducing the time taken to acquire information from 10 / 15 minutes to less than one minute and eliminating errors due to manual data entry.

Furthermore, in this way a complete tracking of the goods and the specific information regarding single cargo units is ensured.



MMTP CH30 PF - TRENO IN PARTENZA

spedizione: TRS.0301P agente: SAMER & CO SHIPPING SPA
allibramento Sinfomar 870204 del 28/01/2018

treno nr.: 41850 di data: 29/01/2018 ora: 04:50
diretto a: Krefeld in arrivo da: SAMER SEAPORTS TERMINALS

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8	378049520455	VAGONE VUOTO									
9	378049563109	VAGONE VUOTO									
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		CNTR : EIBB4509443	LAVORI DI GHISA, FERRO HS: 7306 19 10	22.740	4.000	26.740	00739127		T1/MRN	T1/MRN: 18TR16040000017517	870190
12	318045563596	CNTR : SANU7960255	MACCHINE ED APPARECCHI ELETTRICI HS: 8516 79 20	9.300	4.000	13.300	05118410		T1/MRN	T1/MRN: 18TR34120000083476	870191
13	378049563000	VAGONE VUOTO									
14	378049563034	VAGONE VUOTO									
15	338549926248	VAGONE VUOTO									

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Autorità di Sistema Portuale del Mare Adriatico Orientale
Porto di Trieste
Sinfomar

Figure 8 - Train module "CH30"

The main aim of this action is to actively involve RUs serving the Port of Trieste to exchange these data for inbound trains. This will allow the same time reduction as for outbound trains and the elimination of potential human errors.

2.5. Key actors

The main actors to be involved are the following:

Stakeholders name and role	How it is important? (Low - Med - High)	Current level of support (Low - Med - High)	What do you want from stakeholders?	What is important for them?	How could stakeholders block your efforts?	What is your strategy for enhancing stakeholders support?
RFI S.p.A.	High	High	Implementation of the infrastructural works on RFI side	Adequate funds and coordination at local level	Not implementing their works	Continuous and regular meetings and feedbacks
Railway Undertakings	High	Med	Commitment to exchanging data on trains	Reciprocity in data exchange	Filtering data	Showing the added value of data exchange
RRTs	High	Med	Commitment to exchanging data on trains	Reciprocity in data exchange	Filtering data	Showing the added value of data exchange
Terminal operators	High	High	Commitment to exchanging data on trains	Reliability and continuity of data exchange	Filtering data	Showing the added value of data exchange
Freight Forwarders	High	High	Commitment to exchanging data on trains	Reliability and continuity of data exchange	Fear for privacy of commercial data	Showing the added value of data exchange
Customs Agency	High	High	Support in the implementation of fast corridors	IT infrastructure supporting fast corridor	Not implementing fast corridors	Continuous and regular meetings and feedbacks

2.6. Timeline and financial resourses

The following Gantt chart recapitulates the temporal hierarchy of the actions and the steps to be taken in order to achieve the expected results.

	2020	2021	2022	2023	2024	2025
Upgrade the railway (last mile) infrastructures						
Upgrade of the railway last mile connection in Campo Marzio station;						
Infrastructural upgrade for the reactivation of the railway line connecting Aquilinia station to Campo Marzio;						
Upgrade of the existing infrastructure and new railway station at Scalo Legnami. Although for this action no financial provision has been made, it is the most important in the long term, since it would serve the new "Logistic Platform" to be inaugurated at the end of 2019 and the new Pier no. 8, to be constructed by 2025;						
Infrastructural and technological upgrade of the port marshalling yard connecting Piers no. 5, 6 (RoRo transport) and 7 (containers) to Campo Marzio Station and then to the national railway lines.						
Extend the scope of the Port Community System						
Extension of the PCS to the Port of Monfalcone and, in the long term, with Porto Nogaro;						
Development of EDIs with the RRTs of Cervignano, Gorizia and Pordenone;						
Development of EDIs with foreign RRTs;						
Development of EDIs with the RUs serving the Port of Trieste;						
Testing blockchain technologies.						

Table 3 - Gantt chart Global project - Port of Trieste

Under the perspective of the financial resources, specifically detailed for each activity/item within the table below, the Italian government has already funded most of this global project, but only on the sections belonging to the national infrastructure manager (Rete Ferroviaria Italiana - RFI S.p.A.):

Item	Cost (euros)	Funded (euros)
Upgrade of the railway last mile connection of Campo Marzio Station	67,000,000	67,000,000
Infrastructural upgrade for the reactivation of the railway line connecting Aquilinia station to Campo Marzio	28,000,000	18,000,000
Upgrade of the existing infrastructure and new railway station at Scalo Legnami	50,000,000	0,00
Infrastructural and technological upgrade of the port marshalling yard - Campo Marzio	32,400,000	32,400,000
TOTAL	**177,400,000**	**85,000,000**

Table 4 - Global project - Port of Trieste

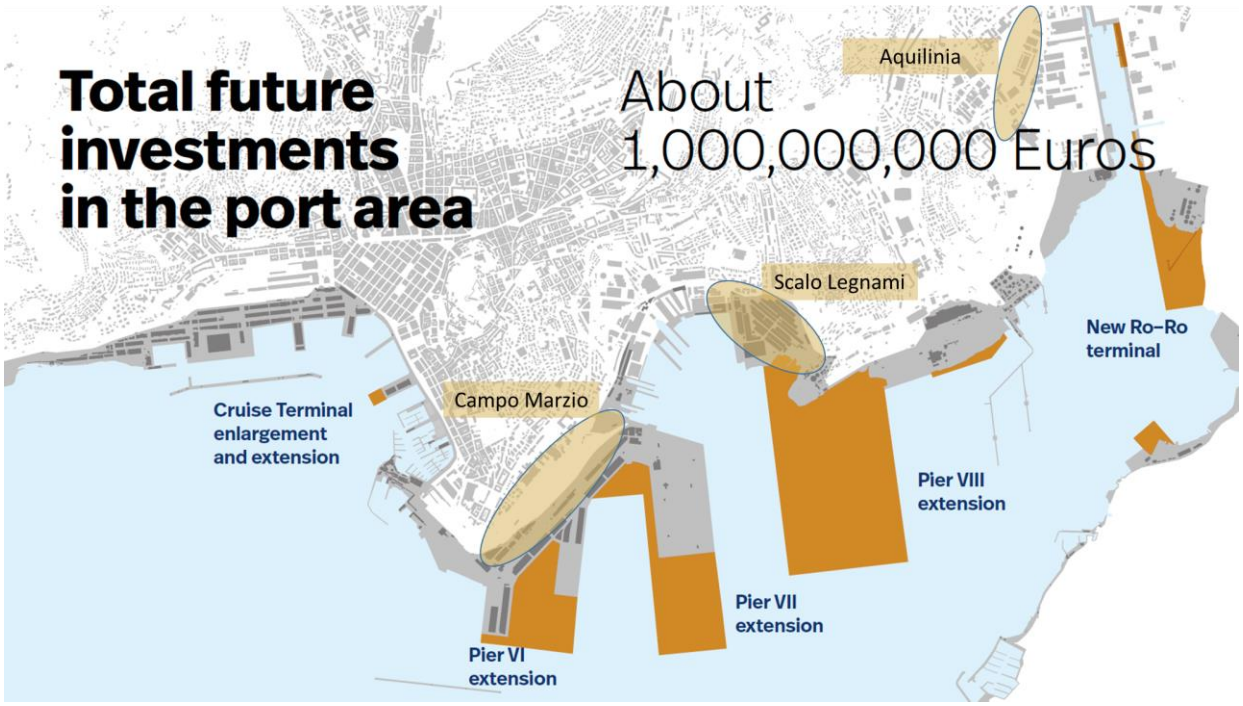

Figure 4 - Total future investments - Port of Trieste

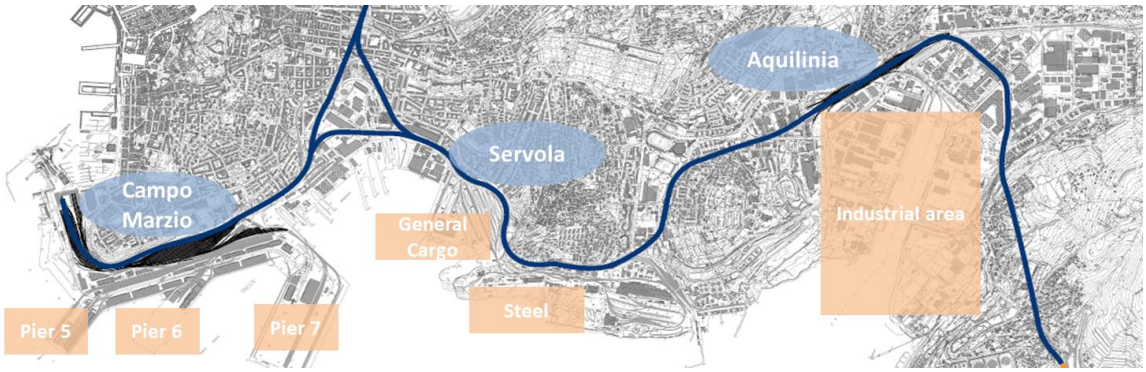

Figure 5 - Railway infrastructures of the Port of Trieste

2.7 Expected results

The actions described in the previous chapters encompass a wide range of tasks that PP2 will implement over the next few years.

For most of them, the expected results have been calculated either based on the current and future rail infrastructures or on similar past experiences, especially those related to EDIs.

The only expected result which cannot be estimated as present relates to the testing of blockchain technologies, due to the novelty of the IT tool and the lack of similar testing fields.

	Expected result
Upgrade the railway (last mile) infrastructures	
Upgrade of the railway last mile connection in Campo Marzio station	Increase the train capacity by 20%
Infrastructural upgrade for the reactivation of the railway line connecting Aquilinia station to Campo Marzio	Increase in the port train capacity by 30%
Upgrade of the existing infrastructure and new railway station at Scalo Legnami. Although for this action no financial provision has been made, it is the most important in the long term, since it would serve the new "Logistic Platform" to be inaugurated at the end of 2019 and the new Pier no. 8, to be constructed by 2025	Increase in port train capacity by 30%
Infrastructural and technological upgrade of the port marshalling yard connecting Piers no. 5, 6 (RoRo transport) and 7 (containers) to Campo Marzio Station and then to the national railway lines	1) Increase the train capacity of the marshalling yard of the Port of Trieste by 80%; 2) Allow 750m-long trains, thus increasing the train length by 35%; 3) Increase the speed of marshalling operations on average by 35%, and by 70% for Pier no. 7.
Extend the scope of the Port Community System	
Extension of the PCS to the Port of Monfalcone and, in the long term, with Porto Nogaro	Improvement of coordination among platforms
Development of EDIs with the RRTs of Cervignano, Gorizia and Pordenone	Time reduction related to administrative procedures for train entry/exit by 95%
Development of EDIs with foreign RRTs	Time reduction related to administrative procedures for train entry/exit by 95%
Development of EDIs with the RUs serving the Port of Trieste	Time reduction related to administrative procedures for train entry/exit by 95%
Testing blockchain technologies	Improvement of coordination along the whole logistic supply chain

Table 6 - Qualitative and quantitative indicators on expected results - Port of Trieste

2.8 References

List of the source of information:

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