

D.3.2.2: Territorial Needs Assessment for the port of Trieste

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INTRODUCTION

On the basis of Deliverable D.3.2.1: Methodology for the implementation of Territorial Needs Assessments (TNA) prepared by WP Leader, this report aims to analyze the territorial needs of the Port of Trieste and of the autonomous region Friuli-Venezia Giulia in the field of multimodal freight transport.

SECTION A – Territorial Analysis, will briefly illustrate the main characteristics of the region Friuli-Venezia Giulia, focusing in particular on:

- SUBSECTION A.1 – Territory description in the Programme Area, focusing on most significant nodes and hubs.
- SUBSECTION A.2 – Multimodal transport, supply and demand analysis. Examining main EU corridors for freight transport and multimodal hubs in the programme area. Analyzing main infrastructures and existing data of freight transport flows, including modal share.
- SUBSECTION A.3 – Tools and measures supporting multimodal transport. Reporting on tools and measures fostering multimodality (policies, plans, etc.). Defining current regulatory framework, as well as relevant policies and measures linked to freight transport. Highlighting strategic plans and actions. Listing and discussing projects to improve multimodality.

SECTION B – Future Scenarios. Description of measures that are either planned for the future or already being implemented. Implications and forecasts for future scenarios and the impact of above mentioned measures will be briefly discussed, taking in account also the impact of future infrastructures. In addition to future scenarios and measures that are specific to the Port of Trieste, also other relevant known projects and planned actions within the Friuli-Venezia Giulia region will be mentioned and described.

SECTION C – Mapping out stakeholders. Deals with the involvement of major stakeholders in the programme area as a key element for project results' dissemination. The key stakeholders in the area are identified as they affect project activities and outcomes. A table maps stakeholders according to their influence on the project and their level of interest in the project. Stakeholders are also mapped according to their role and the benefit (or conflicts)

their involvement could bring, taking in consideration current involvement and strategies to improve their support.

SECTION D – Analysis of IT systems. Describes the implementation and the upgrades of ICT systems and particularly the Port Community System (PCS) in the Port of Trieste, focusing in particular on:

- SUBSECTION D.1 – Architecture model.
- SUBSECTION D.2 – Implementation stage. Stages in the design and implementation of the PCS.
- SUBSECTION D.3 – Usage by and impact on freight agents. Evaluation of the impact in PCS adoption and actual use of the PCS by different stakeholders.

SECTION E – SWOT Analysis. Reports the strategic evaluations about the Port of Trieste and the Friuli-Venezia Giulia region using this analysis instrument.

SECTION F – Main Results. Brief summary of findings.

A: Territorial analysis

1. Territory description in the Programme Area focusing on most significant nodes and hubs

Friuli-Venezia Giulia is an Italian autonomous region, governed by a special act, that lies in North-Eastern Italy. Trieste is its main city.

With an area of 7,845 square kilometers and roughly 1,218,000 inhabitants, Friuli-Venezia Giulia borders with Austria to the north, with Slovenia to the east and with the Italian region Veneto to the west. Morphologically, the region may be divided into four natural areas: alpine, hilly, flat and coast.

A Confindustria FVG (regional Industry Association) survey provides an overall positive picture of the regional industry: in the fourth quarter of 2018 industrial production increased by 3,9

points, equal to 4,1% compared to the 0,2% increase of the previous quarter. In addition to this, sales reported good performances both on internal market as on foreign markets and new orders registered a sharp increase, too.

1.1 Port of Trieste

The Port of Trieste is the main port of the Region dealing with a vast range of traffic. The public body in charge of its management is the Port Network Authority of the Eastern Adriatic Sea, whose primary task is to direct, plan, coordinate, promote and control port operations and commercial and industrial activities in the port (according to the Law no. 84/1994 as amended by the Legislative Decree no. 169/2016).

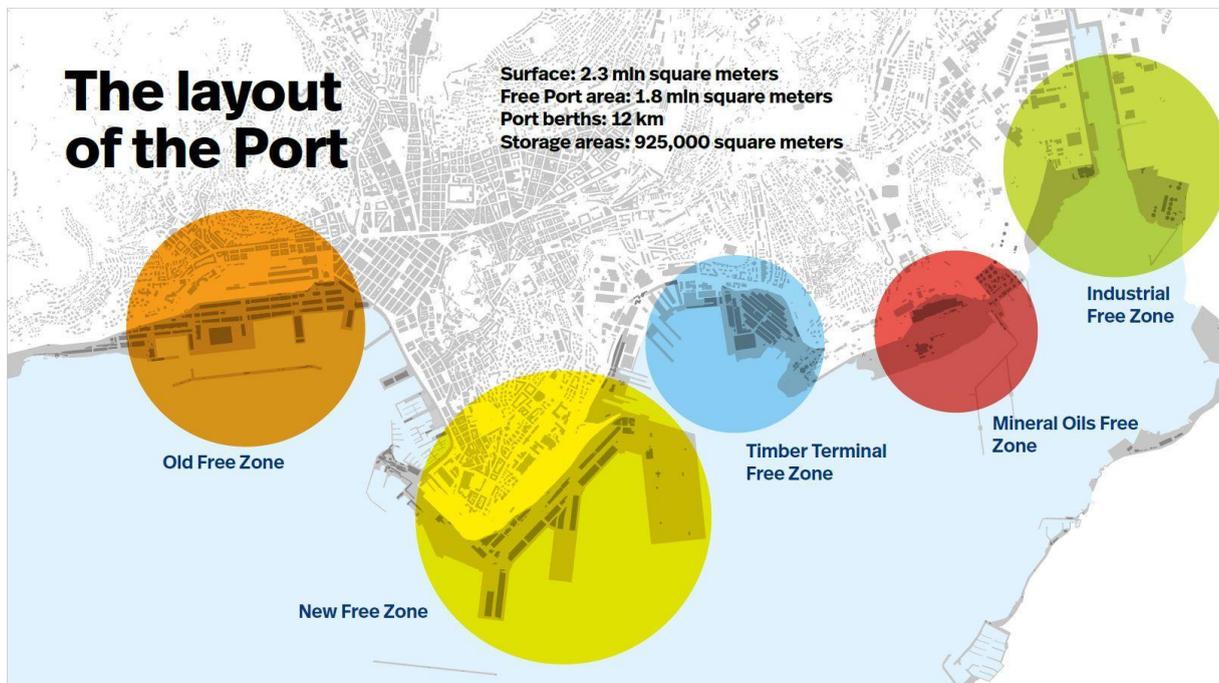


Figure 1: Layout Port of Trieste

Located in the heart of Europe, at the intersection between shipping routes and the Baltic-Adriatic and Mediterranean TEN-T core network corridors, the Port of Trieste is an international hub for overland and sea trade with the dynamic market of Central and Eastern Europe.

The intensification of trade and maritime traffic between the Far East and Europe along with the EU enlargement process have revived the importance of the Upper Adriatic, opening up new growth and development opportunities for Trieste maritime industry. In this context, Trieste plays a decisive role in two separate supply chains: long-distance intercontinental maritime transportation and short/medium-distance intra-Mediterranean trade. The convergence of the TEN-T strategic axes of the “East Mediterranean Motorways of the Sea” with the “Baltic-Adriatic and Mediterranean Corridors” is resulting in the growth of port multimodal services and the development of innovative solutions in the field of rail-based intermodal transport nodes and operations.

The Port of Trieste is also terminal of regular and direct oceanic connections with the Far East, with calls in several ports in the Mediterranean basin, carried out by the main world shipping companies.

More than 200 trains per week connect Trieste to the productive and industrial areas in North-East Italy and in Central Europe, with several destinations, like Germany, Austria, Luxembourg, Slovakia, Hungary, Belgium and Czech Republic serving an extremely varied economic hinterland with a growing development. To reach the reference markets in Central and Eastern Europe highly specialized logistics services have been developed, in particular direct trains organized by the company Alpe Adria S.p.A., a neutral multi-costumer operator that arranges “all-in” packages.

With regard to the technical specifications, the Port of Trieste has an internal rail network (70 km of tracks) that connects with the national and international network, and allows all the docks to be served by rail with the possibility of shunting and/or assembling freight trains directly in the various terminals. A direct junction and an elevated road (within the Port) connect to the outside road system, which leads directly to the motorway network, ensuring ease of access to the national road network.

The main favorable features of the Port of Trieste are briefly listed as follows:

- Deep seabed and optimal nautical accessibility (18 meters depth).
- Availability of disused industrial sites that can be reconverted.

- High operating margins for the container traffic, Ro-Ro and various goods sectors.
- Multifunctionality of the port, operating in all traffic sectors.
- Excellent location with respect to the markets in Central and Eastern Europe.

Shortcomings concern primarily:

- Insufficiency of parking areas.
- Limitations of the internal and backbone railway network.

The Port of Trieste operates in several areas:

- Old Free Zone: this is the “historical” port of Trieste. This area has been assigned to the ownership of the Trieste Municipality.
- New Free Zone: this is the heart of the “new port” with two Ro-Ro terminals (Pier V and Pier VI) and one container terminal (Pier VII).
- Timber Terminal: it is currently dealing with various goods in packages. After completing the construction of the so called “Logistics Platform” this terminal will be converted into a mixed container&Ro-Ro terminal and will act as basement of the future Pier VIII.
- Oil Free Zone: dealing with the arrival of mineral oils that, routed through pipelines, reach several destinations in Central Europe.
- Industrial Free Zone: dedicated to the industrial zone of Trieste, managed by the Consortium for the Local Economic Development of the Giulian Area; the Port of Trieste is its majority shareholder.

The main feature of the Port of Trieste is represented by its legal regime of Free Port, kept in application of the rules of the Paris Peace Treaty (Annex VIII). According to it, the Free Zones of the Port of Trieste enjoy the legal status of customs clearance exception and do not belong to the customs territory of the European Union.

The primary instrument governing the legal regime of the Free Port of Trieste is Annex VIII of the 1947 Paris Peace Treaty confirmed by the Italian regulations and laws. The Free Port of Trieste is political territory of the Italian State. Italian and European laws cannot, however,

restrict the freedoms relating to customs duties and operations guaranteed by the Peace Treaty and its instruments of implementation. The legal status of the Free Port of Trieste is essentially embodied in two regimes: unrestricted access and transit and customs clearance exemption.

1.2 Port of Monfalcone

The Port of Monfalcone is located in the most northern part of the Mediterranean Sea, and overlooks the inner part of the Gulf of Trieste. The access channel is 4500 meters long and 11.70 meters deep. The Portorosega pier is 1460 meters long with a variable depth from 6.5 meters of the old part to 11.70 of the new one.

According to the Regional Law n. 12/2012 the Region has acquired competence in the field of granting concessions of sea State property and authorizations to the undertakings operating the portual field. In the port area there are also a Special Agency for the Port of Monfalcone dealing with promotion and infrastructures and the “Consorzio per lo Sviluppo Economico del Monfalconese” with competence in infrastructure matters. The main goods treated are cellulose, paper, timber, forest products, steel products, kaolin, marble, coal, cereals and cars.

The railway connection to the Venice - Trieste and Tarvisio - Trieste lines is ensured by a special railway siding. Moreover, an additional railway ring has been built, that allows the formation of trains already inside the port.



Figure 2: Port of Monfalcone

Table 1: Port of Monfalcone - Statistics 2013 - 2018

Port of Monfalcone – statistics (ton)	
2013	3,970,642.00
2014	4,286,382.00
2015	4,451,422.00
2016	4,635,875.00
2017	4,633,411.00
2018	4,537,278.00

The main features of the Port of Monfalcone are the following:

- Excellent road and railway logistics connections.
- Wide availability of yards (behind the docks).

Shortcomings concern primarily:

- Functional limits of the current structures, which involve frequent staying in the harbor, and the limited availability of berths.
- Need for maintenance and deepening of channels.

According to the Decree N. 57 of the President of the Republic of March 29th 2018 entered into force on June 14th 2018, the Port of Monfalcone is now operating within the Port Network Authority of the Eastern Adriatic Sea.

1.3 Porto Nogaro

The Porto Nogaro is located in the Province of Udine, on the banks of Corno River. It is accessed through a 3-mile trans-lagunar channel and the 3-mile navigable Corno channel; hence, there are in total 6 miles between the Margreth quay and the sea.

According to the Regional Law n. 12/2012 the Region has acquired competence in the field of granting concessions of sea State property and authorizations to the companies operating in the port. The Consortium for the Friuli Economic Development also operates in the port area, dealing with the promotion of port activities and management of the infrastructure. Porto Nogaro is also a seat of a Maritime Authority.

The total extension of port areas reaches 365,000 square meters. The main goods treated are steel and metallurgic products, timber, dry bulk, transport machinery and special transports.

The terminal is well connected to the motorway A4 (through the local road S.P. 80). In addition to this, it is linked with its own railway siding to the main railway lines.



Figure 3: Porto Nogaro

Shortcomings concern primarily:

- The trans-lagunar access channel needs frequent and dredging activities.
- Porto Nogaro is linked to the San Giorgio di Nogaro railway station by a single track crossing the town center.

Table 2: Porto Nogaro - Statistics 2013 - 2017

Porto Nogaro – statistics (ton)	
2013	941,895.00
2014	1,010,867.00
2015	1,044,099.00
2016	997,615.00
2017	1,001,666.00

1.4 Interporto di Trieste - Trieste intermodal terminal

Trieste intermodal terminal, located close to the Italian - Slovenian border of Ferneti (Trieste), is an infrastructure dedicated to intermodal logistics. It plays an important role as dry port of Trieste, Monfalcone and Capodistria and its second shareholder is the Port of Trieste.

Terminal areas has a total of 350,000 square meters: 160,000 square meters are covered by infrastructure areas, 30,000 square meters of covered warehouses, both domestic and foreign for storage of goods under ADR and HACCP, 50,000 square meters of aprons and 80,000 square meters of parking areas for heavy vehicles. For railway services, six tracks are available, divided into two operational beams.

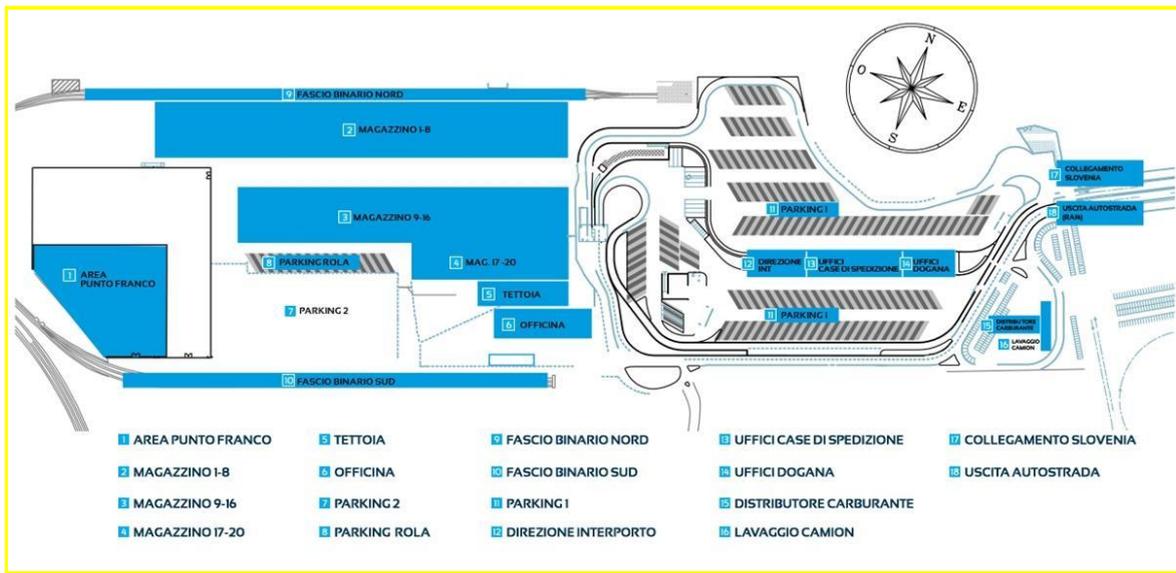


Figure 4: Intermodal terminal of Ferneti: infrastructure for freight transport

The Intermodal Terminal of Trieste plays an important role as a “buffer area” for the management of the relevant traffic of Turkish semi-trailers reducing traffic congestion both in the city of Trieste and in the port. Moreover, a railway shuttle service from the Port of Trieste to the Trieste freight terminal was activated: more than 500 trucks have been removed from the road in order to continue the journey by train with RoLa service to Salzburg.



Figure 5: Intermodal Terminal of Trieste

1.5 Interporto di Cervignano del Friuli – Cervignano del Friuli Intermodal terminal

Cervignano del Friuli Intermodal terminal is the biggest one in the Region, with the ambition to become the dry port area for all the three regional ports - it is 11 km away from Porto Nogaro, 29 km away from Monfalcone and 48 km away from Trieste.

Its main features are listed as follows:

- Structured area of 464,000 square meters.
- Warehouses (24,000 square meters): two covered connected warehouses (12,000 square meters each).

- Intermodal parking area (160,000 square meters, 1,000 meters long, about 150 meters wide).
- 6 railway tracks, each 750 meters long.
- Roof for freight shelter (covers over 17,500 square meters), partly equipped with an overhead crane with 12.5 tons capacity.
- A parking area for heavy vehicles.
- Total length of the railway siding: 3.5 kilometers.
- Capacity of 20 intermodal trains per day plus 6 conventional ones.

Two railway lines cross the terminal:

- Venezia - Trieste – Mediterranean Corridor
- Cervignano del Friuli - Palmanova - Udine - Tarvisio – Adriatic-Baltic Corridor.



Figure 6: Intermodal terminal of Cervignano del Friuli

1.6 Autoporto di Gorizia – Gorizia terminal

The logistics infrastructure owned by SDAG, the public company managing the Gorizia freight terminal, comprises the freight terminal and the border station of S. Andrea. Autoporto of Gorizia extends on an area of 600,000 square meters and offers a wide range of logistics and transport services from and to Central Europe.

The Autoporto was designed in order to become a service center for goods, for the storage and consolidation of cargoes, while the Station S. Andrea represent a modern and equipped system for safe stop services.

The infrastructure includes:

- Operational parking areas of 130,000 square meters.
- Unloading platform/docks with a warehouse for temporary storage of goods (1,000 square meters).
- Intermodal warehouse (double lane) of 3,000 square meters.
- Cold storage rooms.
- 5 rail tracks.
- Capacity of the terminal in terms of arrival and departures of trains per day – 4 trains plus 4 RoLa.
- Platform for the road to rail modal change. The terminal is directly linked to the Gorizia - Vrtojba railway line, with possible forwarding to Cervignano – Venezia and Udine – Tarvisio lines.



Figure 7: Autoporto di Gorizia - Gorizia terminal

1.7 Intermodal terminal - Centro Ingresso di Pordenone

With its 160,000 square meters the Intermodal terminal of Pordenone has an infrastructure for the railway and terminal activities. There are 7 rail tracks, 3 of which are electrified (each is 800 meters long) and 4 are operating tracks (700-750 meters long). The potential operability of the area is up to 8/10 trains per day and 34,000 Intermodal Transportation Units (UTI) per year (approximately 24,000 trucks).

The platform is designed for receiving Ro-La trains and is set up for the installation of gantry cranes. In the warehouses connected by sidings (40,000 square meters) long term or short term storage of Intermodal Transportation units is possible.

The parking areas are designed in order to allow all the operations of management of vehicles and transport units in total security.

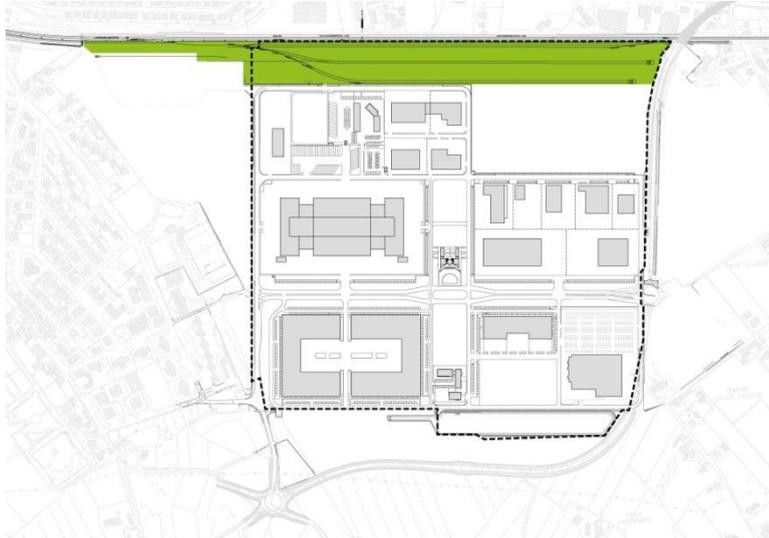


Figure 8: Intermodal terminal of Pordenone: infrastructure for freight transport

2. Multimodal transport: supply and demand analysis

As described in previous section, despite being a relatively small region, Friuli-Venezia Giulia hosts three ports and four intermodal terminals. Furthermore, it is crossed by two TEN-T core network corridors, the Mediterranean Corridor and the Baltic-Adriatic Corridor.

2.1 The regional road network

The regional road network consists of a motorway network and a network of main ordinary roads.

The motorway network is divided as follows:

- Motorways directly managed by ANAS S.p.A.: motorway link RA13 Lisert - Cattinara with branch RA14 Opicina - Ferneti in the province of Trieste.
- Motorways under concession to Autovie Venete S.p.A.: A4 Mestre – Lisert (section in the regional territory: Latisana - Lisert); A23 motorway section Palmanova – Udine,

RA17 Villesse – Gorizia; A28 Portogruaro – Pordenone – Sacile with future extension towards Conegliano (section in the regional territory: Sesto al Reghena – Sacile);

- Motorways managed by Autostrade per l'Italia S.p.A.: A23 Udine – Tarvisio (state border) motorway section.

The main ordinary roads network has undergone profound changes in its management. The Region has now the ownership and the management of 650.214 km of former state roads. Other 269.616 km are state-owned but managed by the Region. The State owns and manages directly 160.244 km (Legislative Decree 111/2004 that became effective on January 1st, 2008).

To manage the regional owned roads and those owned by the State but assigned to its management, the Region FVG has established a single shareholder company, the Friuli-Venezia Giulia Strade S.p.A.

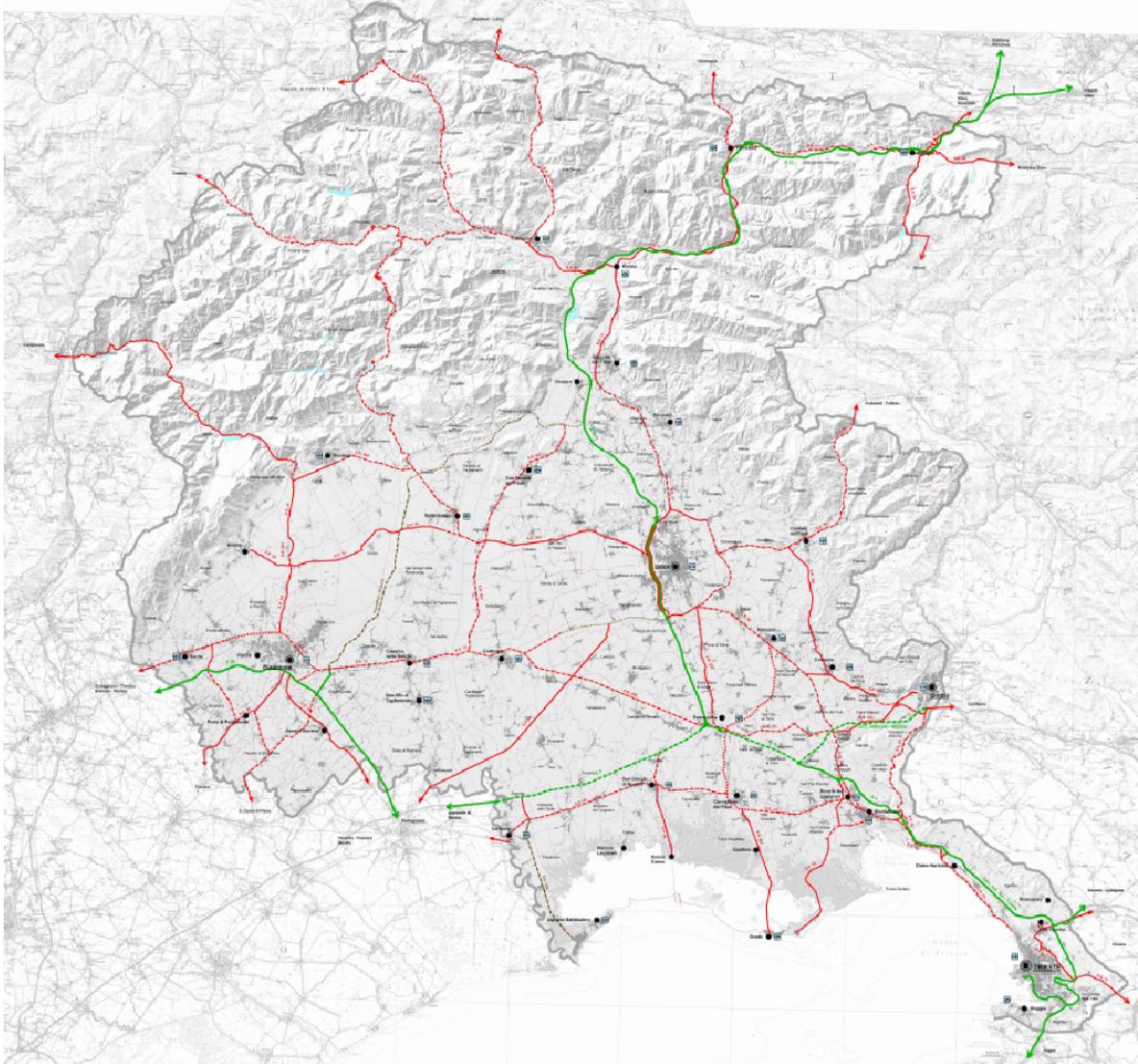


Figure 9: Friuli-Venezia Giulia Region: motorway (green) and main ordinary roads (red) network

2.2 The regional railway network

The regional railway network in Friuli-Venezia Giulia currently comprises 670 km of tracks, 480 km of which are electrified and 190 km are non-electrified, including also freight lines and sidings to ports and industrial areas:

1. Core double-track lines:

- (Mestre) – Latisana – Cervignano – Monfalcone – Trieste
- Monfalcone – Gorizia – Udine
- Aurisina – Villa Opicina
- Udine – Pordenone – Sacile – (Mestre)
- Udine – Tarvisio

2. Secondary single-track lines:

- Udine – Cervignano
- Gemona – Sacile
- Casarsa – Cordovado – (Portogruaro)
- Gorizia – state border (Nova Gorica)
- Udine – Cividale

3. Freight lines and sidings:

- Trieste Centrale – Trieste Campo Marzio
- Bivio Aurisina – Bivio Viadotto
- Trieste Campo Marzio – Villa Opicina
- Trieste Campo Marzio – Aquilinia
- Udine Parco – Bivio Vat
- Monfalcone – Porto Rosega
- San Giorgio di Nogaro – Porto Nogaro

Throughout the railway network, with the exception of the Udine - Cividale line, the the company Rete Ferroviaria Italiana S.p.A. (i.e. Italian Railway Network) manages the infrastructure. Railways undertakings, in a system of free competition, operate the freight service.

The company Società Ferrovie Udine - Cividale s.r.l., owned entirely by the Region, manages the Udine - Cividale line.



Figure 10: Friuli-Venezia Giulia Region: railway network - main (red) and complementary (blue) lines

The railway accessibility, from Port of Trieste to the main connections towards current and potential Italian and foreign hinterland markets, can be described as “highly qualified”. All

tracks are characterized by the maximum possible loading gauge (“gabarit”) available for all types of intermodal transport, that is the “P/C 80” loading gauge.

The figure below shows a recent map of railway loading gauge in Europe. The lines of interest for the Ports of Trieste and Monfalcone, which connect them to the Central and Northern Europe (including the Baltic geographical area), are all characterized by the maximum loading gauge (P/C 80, dark blue color). Tracks that serve the hinterland of the foreign ports of the upper Adriatic basin are shaped between the standards P/C 32 and P/C 50, and the lines that serve the Tyrrhenian ports are between the standards P/C 25 and P/C 45.

Also about the loading gauge, the interventions foreseen by the Italian Railways Network (Rete Ferroviaria Italiana S.p.A.) Programme Contract and the related plan, agreed with the Ministry of Infrastructure and Transport, will enable the PC/80 standard to be reached in the system of entire North East before the deadline set by the European Union.



Figure 11: European railway network: loading gauge of the main lines

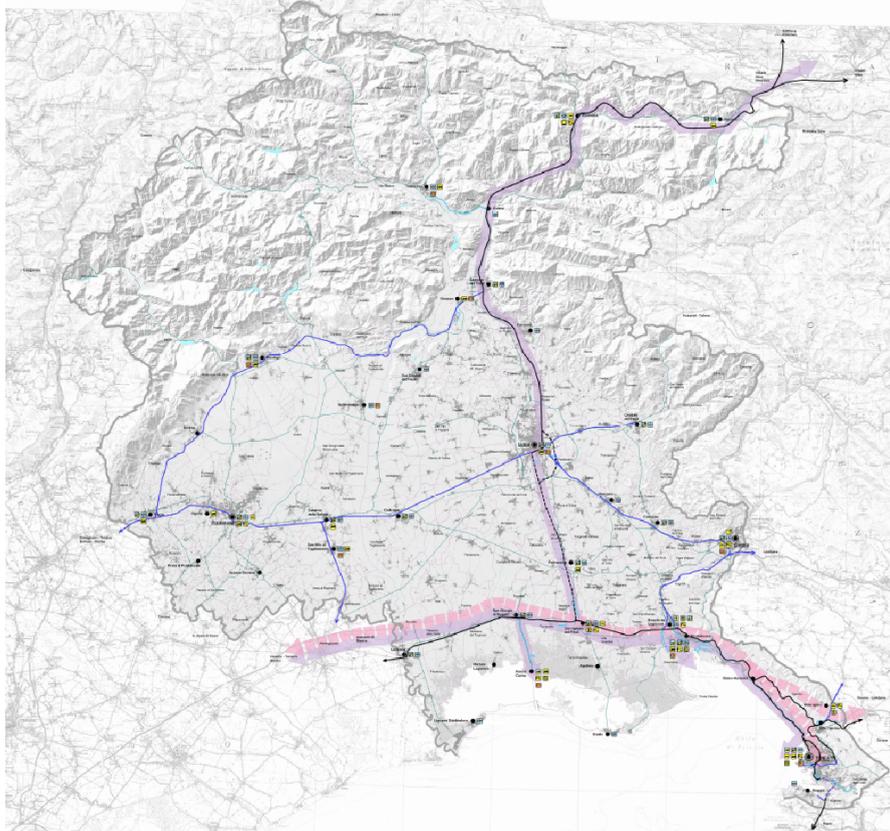


Figure 12: Friuli-Venezia Giulia overall network of intermodal logistics infrastructures.

The pink overlay gives a measure of main freight fluxes.

2.3 Supply and demand analysis

The Port of Trieste is currently the first Italian port for volume of goods in transit and concentrates 97% of regional maritime traffic.

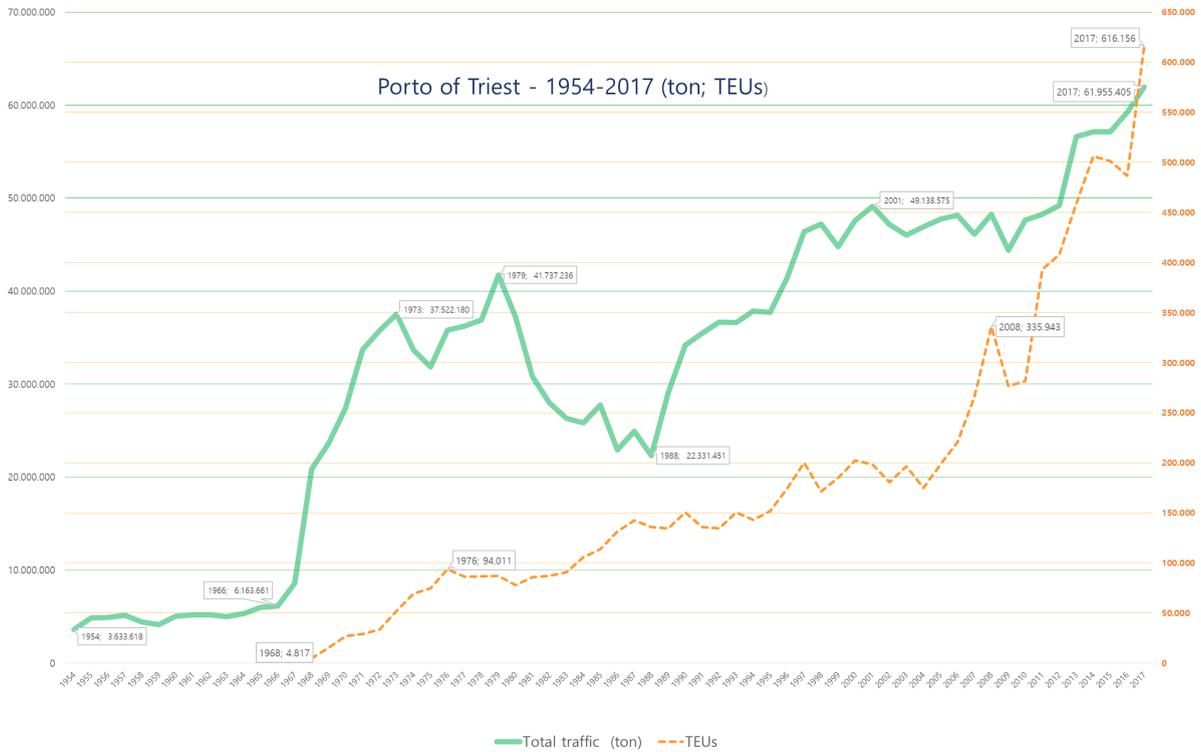


Figure 13: Port of Trieste: traffics 1954 – 2017 in tons (green) and TEUs (dotted orange)

In particular, the table below shows the statistics referred to the last four years (2015 - 2018):

Table 3: Port of Trieste - Statistics 2015 - 2018

Port of Trieste – statistics 2015-2018 (ton)							
	2015	2016	2017	2018	Δ % 2015/2018	Δ % 2016/2018	Δ % 2017/2018
Total tonnage	57,124,759	59,244,255	61,947,454	62,676,502	9.72%	5.79%	1.18%
Total liquid	41,286,761	42,756,341	43,750,555	43,234,735	4.72%	1.12%	-1.18%

bulk (tons)							
Total dry bulk (tons)	1,607,232	1,971,001	1,639,595	1,665,508	3.63%	-15.50%	1.58%
Total general cargo (tons)	14,230,766	14,516,913	16,557,304	17,776,259	24.91%	22.45%	7.36%
Number of vehicles	301,352	302,619	314,705	309,424	2.68%	2.25%	-1.68%
TEUs (of which full)	501,144 410,447	486,462 437,084	616,156 547,579	725,426 658,330	44.75% 60.39%	49.12% 50.62%	17.73% 20.23%
Trains	5,980	7,631	8,682	9,732	62.74%	27.53%	12.09%

Statistics show a significant increase in the number of containers (expressed in TEU) both in global terms, with a double-digit growth within the four-year period, and in terms of full containers. This data/information, non-often mentioned in the official statistics, is a good indicator of the attractiveness of a port since it refers to containers containing goods that are loaded/unloaded and received/forwarded from the final destination. Empty containers and those in transshipment, on the other hand, do not particularly contribute to the development of the port and of its territory, in terms of benefit. From this point of view, it is interesting to note that in the four-year period 2015-2018 the number of full containers grew more than the general increase of the containerized traffic in the same period (+60.39% compared to +44.75%).

Furthermore, there is a huge increase in intermodal traffic (+62.74 % in the four-year period) that confirms the Port of Trieste the first Italian port in terms of number of trains.

In the first semester of 2019, statistical data show as a very important point the fact that the modal shift continues a stable increase, independent from overall traffic growth with total number of trains increased by 7%.

Table 5: Port of Trieste - Statistics Q1+Q2 2015 - 2019

Port of Trieste – statistics Q1+Q2 2015-2019 (ton)									
	2015	2016	2017	2018	2019	Δ % 2015/19	Δ % 2016/19	Δ % 2017/19	Δ % 2018/19
Total tonnage	28,122,216	29,443,658	29,720,669	31,168,780	30,721,066	9.24%	4.34%	3.37%	-1.44%
Total liquid bulk (tons)	20,157,946	21,001,765	20,783,302	21,503,899	21,102,476	4.69%	0.48%	1.54%	-1.87%
Total dry bulk (tons)	951,359	1,082,339	777,775	792,061	1,010,302	6.20%	-6.66%	29.90%	27.55%
Total general cargo (tons)	7,012,911	7,359,554	8,159,592	8,872,820	8,608,288	22.75%	16.97%	5.50%	-2.98%

Number of vehicles	153,379	152,412	155,810	161,223	115,185	-24.90%	-24.43%	-26.07%	-28.56%
TEUs	239,853	243,281	299,280	345,056	391,068	63.04%	60.75%	30.67%	13.33%
(of which full)	189,637	221,212	265,063	318,350	349,197	84.14%	57.86%	31.74%	9.69%
Trains	2,850	3,492	4,082	4,816	5,169	81.37%	48.02%	26.63%	7.33%

This positive trend reflects the significant investments in the port railway infrastructure made by the Italian Government, the Autonomous Region of Friuli-Venezia Giulia, the Port of Trieste and especially by the terminal operators of the Port of Trieste (Piers V, VI and VII). Section B of this report will illustrate future investments foreseen.



Figure 14: Port of Trieste - railway traffic connections

Unlike other Italian ports, the Port of Trieste serves only in minimal part the regional and national territory focusing rather on markets in Central and Eastern Europe.

The Port Network Authority of the Eastern Adriatic Sea and the terminal operators of the Port of Trieste have realized that the most suitable mean of transport to reach those markets is by train. It allows limiting the congestion of port terminals both in terms of reduction of road traffic and of emissions of polluting and greenhouse gasses.

The table below lists the number of trains per destination country (year 2018). Germany is the first country reached by rail freight flows. Only 28.5% of the trains are to/from Italy, while the remaining 71.5% are to/from foreign countries.

Table 6: Port of Trieste - Statistics about trains per origin/destination country (2018)

Port of Trieste – statistics trains per country (2018)			
Country	# trains	% on total	% full wagons
GERMANY	2,945	30.25	88.92
ITALY	2,776	28.52	87.96
AUSTRIA	1,683	17.29	81.06
HUNGARY	860	8.84	95.79
CZECH REPUBLIC	605	6.22	95.64
LUXEMBOURG	590	6.06	95.77
SLOVAKIA	265	2.72	90.01

BELGIUM	5	0.05	85.71
SWITZERLAND	5	0.05	100.00
TOTAL	9,734	100.00	88.74

The load factor - an average of about 89% - is very interesting: this shows that import and export are well balanced in trains, with strong and stable demand.

The Port of Trieste distinguishes itself also by the modal distribution of the traffic.

In particular, the percentage of full containers that passed through the Port of Trieste in 2018 and used the train is very high (59%). Furthermore also the RO-RO traffic of semi-trailers shows a good percentage (22%) arriving/leaving port by train. This is a particularly good data, also at European level.

Table 7: Port of Trieste - Modal split 2018 (TEUs)

Port of Trieste – Modal split TEUs (2018)		
TEUs passed (not transshipment)	TEUs by train	%
409,695	237,615	58.99 %
Semi trailers passed	Semi trailers by train	%
309,424	71,097	22,98%

However, due to the significant increase in railway freight traffic, there is a problem in terms of capacity of the network to tolerate the traffic growth of 15 - 20% each year.

Section B of this report describes the foreseen structural interventions.

3. Tools and measures supporting multimodal transport (policies, plans, etc.)

The main terminals of the Port of Trieste in terms of multimodal connections, where the port is concentrating its investment priorities, are located in the New Free Zone era connected to the Campo Marzio railway station:

- Ro-Ro Terminal, Pier V, Samer Seaports & Terminals S.r.l.
- Ro-Ro Terminal, Pier VI, Europe Multipurpose Terminal (EMT).
- Container Terminal, Pier VII, Trieste Marine Terminal (TMT).

These three private operators have independent movement of trains and they are all equipped with modern technology for handling, transportation and storage at the service of all types of traffic: Ro-Ro, Ro-La, containerized cargo, fruit and vegetables (potatoes, onions, oranges, and nuts), coffee, grains, metals, engines, steel and chemical products, timber, dry and liquid bulk, crude oil and derivative products.

With regard to the medium and long-term development strategy, the Port of Trieste, as a key node of the EU TEN-T, has the ultimate objective to fully integrate its maritime industry into the local, regional, EU and global multimodal logistics service network.

In the light of this objective and having regard to the current exceptional port traffic positive growing trend, PNAS EAS is focusing on its multimodal related infrastructures and management procedures to adapt their functions to incorporate inland node terminals, utilizing existing inland facilities and designing innovative further solutions able to ensure additional advantage in terms of port connectivity.

For these reasons, as detailed in the following sections, various policy initiatives and a substantial amount of investment in port capacity, both from the perspective of management optimization and infrastructure expansion projects, were undertaken in the last years.

The Regional Law n. 15/2004. greatly supported the increase in railway traffic from and to the Port of Trieste

This Regional Law aims at realizing an effective modal integration of various transport systems and at transferring, consequently, growing shares of freight transport from the road to alternative means of transport (such as railway and maritime transport). According to this law, Region Friuli-Venezia Giulia has been supporting the institution, the start and the realization of maritime and railway transport services articulated as follows:

- Intermodal railway transport services departing and/or arriving from the logistics and port nodes located in the regional territory and on the national and international transit axes. The aim of aid measures is both to compensate (for) the several external and infrastructure costs and to cut extra costs concerning natural and structural penalizations. Such penalizations include physical barriers, borders of several Member and non-Member States, locomotors change, lack of interoperability of the railway equipment, restrictions on the use of the rolling stock and unequal conditions, between various countries, on access costs to railway infrastructure.
- New maritime services for the combined transport of goods arriving and/or departing from the ports located in the regional territory, according to the new Community guidelines for the development of the TEN-T network.

Concerning the intermodal railway traffic, the basic measure of aid provided by the Law amounts to 33.00 EUR per transported intermodal unit, which corresponds to the difference between the external costs of the transport of goods between the road and rail modes over a distance of at least 100 km. Aid measures are not allowed for distances lower than 100 km. The basic aid measure can be adjusted by applying a coefficient that takes into account the length of the journey and the number of countries crossed. However, the measure aid can in no case exceed 30% of the costs of the intermodal transport service.

- Concerning rail routes between 100 e 250 km, the applicable adjustment coefficient is 1.00 in case of crossing the territory of one country, 1.20 in case of crossing the territory of two countries and 1.30 in case of crossing the territory of three countries;

- for rail routes between 251 and 450 km, the applicable adjustment coefficient is 0.90 in case of crossing the territory of one country, 1.10 in case of crossing the territory of two countries and 1.30 in case of crossing the territory of three countries;
- Regarding rail routes equal or longer than 451 km, the applicable adjustment is 0.80 in case of crossing the territory of one country, 1.00 in case of crossing the territory of two countries and 1.20 in case of crossing the territory of three or more countries.

The aid is provided in the form of grant and shall be paid in two parts: an advance equal to 40% and final payments of remaining 60%. The advance is paid only if proper start of the service has been proven. Furthermore, the applicant must subscribe with a bank or insurance company a guarantee policy covering the equivalent value.

In addition to this, the company must commit itself to repay the amounts received in case the beneficiary loses the contribution. The final payment is paid each year, after verifying that the service complies with the terms and conditions for the payment.

If the beneficiary does not use the entire amount of the contribution, for reduction of the tariffs effectively applied or does not comply with the commitments made or modifies the tariff scheme applied, he loses the aid scheme and shall return the advances received.

Regarding the new maritime services, the basic aid measure amounts to 54.00 EUR per transported unit, which corresponds to the difference between the external costs for the transport of goods between the road and maritime modes over a distance of at least 100 km. . Aid measures are not provided if the distances is lower than 20 nautical miles, or the equivalent of land-based services that cross the region's territory. The basic aid measure is adjusted by applying a coefficient that takes into account the route length and the number of port stops carried out based on the modes as illustrated below. However, the aid can never exceed 30% of the costs of the maritime transport service:

- Regarding a maritime route between 20 and 250 nautical miles, the applicable adjustment coefficient is 1.00 for maritime services with final destination in an another

- national port, 0.90 for maritime services with final destination in an another EU or international port and 0.80 for maritime services with an intermediate landing in an another EU or international port and final landing in a national port or conversely;
- As far a maritime route between 251 and 500 nautical miles, the applicable adjustment coefficient is 0.80 for maritime services with final landing in an another national port, 0.60 for maritime services in an another EU or international port and 0.40 for maritime services with an intermediate landing in an another EU or international port and final landing in an another national port or conversely;
 - Concerning a maritime route longer than 501 nautical miles - and in any case within the Ionian Sea basin bounded by a line joining Capo Passero (Italy - Sicily) and Capo Matapan (Greece) - the applicable adjustment coefficient is 0.70 for maritime services with final landing in an another national port. Adjustment is 0.50 for maritime services with final landing in another EU or international port and 0.30 for maritime services with an intermediate landing in another EU or international port and final landing in an another national port or conversely.

The aid is provided in the form of grant and shall be paid in two parts: an advance equal to 40% and the final payment. The advance is paid only if proper start of the service has been proven. Furthermore, the applicant must subscribe with a bank or insurance company a guarantee policy covering the equivalent value.

In addition to this, the company must commit itself to repay the amounts received in the case the beneficiary loses the contribution. Final payment is given each year after verifying that the service complies with the terms and conditions for the payment.

Again, if the beneficiary does not use the entire amount of the contribution for the reduction of the tariffs effectively applied or does not comply with the commitments made or modifies the tariff scheme applied, he loses the aid scheme and shall return the advances received.

The European Commission in charge of controlling State aid has approved the measures foreseen by the Regional Law nr. 15/2004.

The Regional Law nr. 15/2004 is not applicable to the distances shorter than 100 km and does not include the so-called “last mile”, the final part of the journey with the arrival/departure to the origin/destination, usually transferred by road.

In order to support the multimodality also in this phase, Region FVG has allocated some incentives under the “de minimis” regime. In October 2017 the regional council approved an allocation of 1,8 million EUR for regional combined transport, awarded to private companies operating in the transport and commerce field and in the cargo handling sector with their head office in the territory of the Region. This will stimulate the modal shift of the steel slabs directed to the industrial area of Aussa-Corno, currently landed in the Port of Monfalcone (as the seabed of Porto Nogaro does not allow the mooring of ships coming from Black Sea) and transferred by road with significant criticalities for the territories concerned.

Region FVG has allocated 400,000 EUR in order to encourage the recourse to railway system. These funds will allow compensating the higher costs of the rail transport and will be distributed among the enterprises that applied for them. 200,000 EUR are allocated to the Inter-Rail company for the experimental rail transport service of steel slabs from Monfalcone to Porto Nogaro. 200,000 EUR are allocated to the expressions of interest submitted by following companies: DB Cargo Italia, Captrain Italia and Mercitalia Rail.

In addition to this, Region FVG allocated 1,222,800 EUR (222,800 EUR for the financial year 2017 and 1,000,000 EUR for the financial year 2018) for the transport of steel slabs by sea from the Port of Monfalcone to Porto Nogaro by transshipment on vessels suitable for mooring (sea-going barges). Only two expressions of interest have been admitted: one from Fratelli Cosulich (requested contribution of 1,296,000 EUR) and one from FriuliTrans (requested contribution of 1,811,792.87 EUR).

B: Future Scenarios

As already stated in previous A2 section, railway traffic in the Port of Trieste hugely increased in the last four-year period. In the near future this trend should continue, thanks to the efforts by the Port Network Authority towards modal switch. Yet, such an important increase in a relatively short period risks leading to a saturation of the railway network.

The Port of Trieste is linked to the national railway network, and therefore to the TEN-T network, through the nodes listed below:

1. Campo Marzio, which serves Piers V, VI (RoRo) and VII (containers), where most of the traffic is currently concentrated.
2. Servola, which serves the industrial port, i.e. a terminal for various goods and one of the most important steel production sites in North Italy.
3. Aquilinia, which serves the Trieste industrial area.

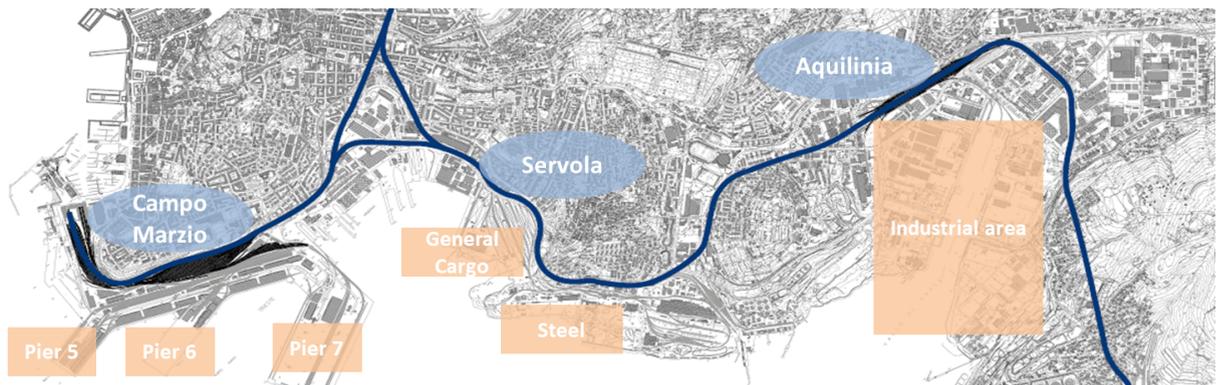


Figure 15: Port of Trieste - Railway infrastructures

The Master plan of the Port of Trieste, approved in 2016, foresees a significant expansion of the port infrastructure for maritime transport.

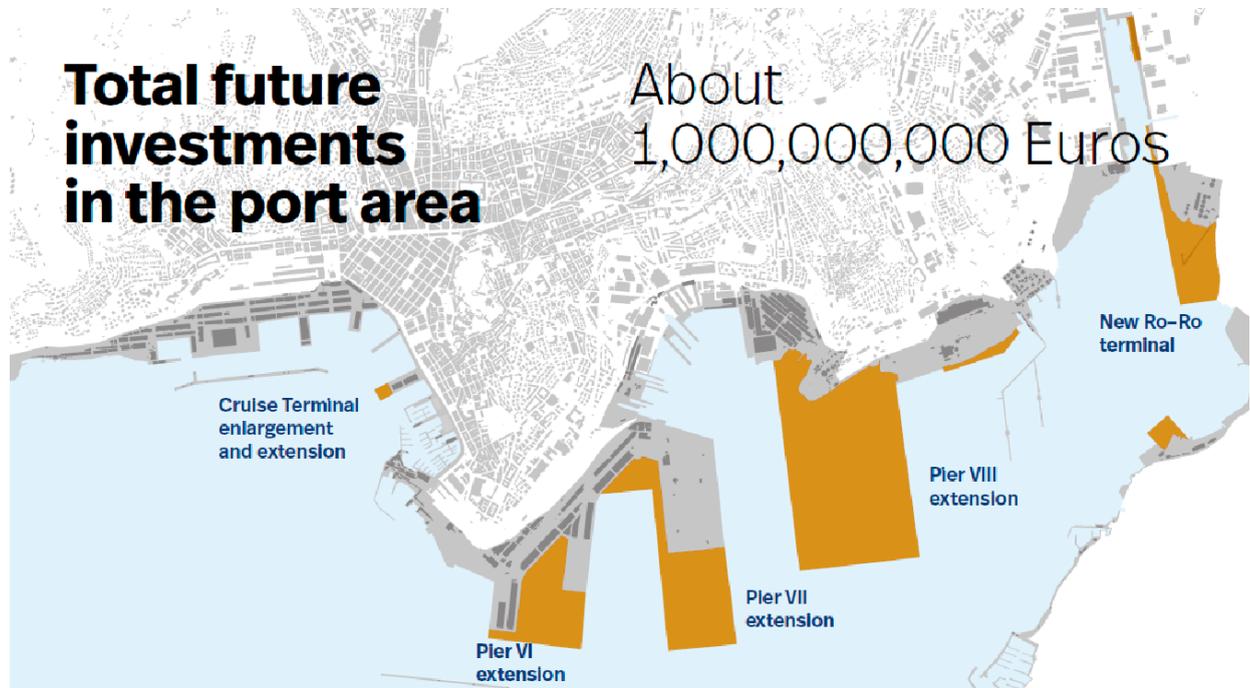


Figure 16: Port of Trieste: new infrastructures, foreseen in Master Plan (MRP)

Therefore, the main infrastructural investments for the Port of Trieste aim at extending the capacity of cargo handling, in particular the railway capacity and the intermodality.

EU project funding is a great tool to be leveraged towards these objectives. The most relevant recent or running European projects, co-funded by the TEN-T / CEF Programme, in which the Port of Trieste is involved are the following:

1. NAPA STUDIES (2013-EU-21017-S): feasibility studies for the upgrading of the railway infrastructure in the Port of Trieste and the development of the Port Community System (total budget: 325,000 EUR , European funding 162,500 EUR). Project concluded.
2. NAPA4CORE (2014-EU-TM-0343-M): construction of the so-called “Logistic Platform” within the general cargo terminal, which will be the basement of the new Pier VIII (total budget: 79 million EUR , European funding: 15.8 million EUR). Project ending in 2020.

3. Adri-Up (2015-EU-TM-0310): technical and functional renovation of Pier VI (total budget: 6.6 million EUR , European funding 1.98 million EUR). Project ending in 2020.
4. TriesteRailPort (2017-IT-TM-0092-W): Upgrade of the railway infrastructures of the port of Trieste (total budget: 32,700,000 EUR, European funding 6,540,000 EUR). Project ending in 2023.

Considering the above mentioned investment plans, and those of the terminal operators, the demand for railway traffic will considerably increase in the coming years.

In this context, the Global Project (2018-2025) concerning the railway infrastructure of the Port of Trieste consists of its upgrading, in order to adapt it to the double-digit growth trend of the rail freight flows.

The Global Project consists of four main sections:

1. Upgrading of the last mile railway connection.
2. Infrastructural upgrading in order to reactivate the railway track linking Aquilinia station to Campo Marzio.
3. Upgrading of the existing railway infrastructure and of the new station Scalo Legnami.
4. Infrastructural and technical upgrading of the railway marshalling yard which connects Piers V, VI (RoRo transport) and Pier VII (containers) to Campo Marzio station and, therefore, to the national railway network.

Italian government has already funded most of this global project, but only for the sections owned by the company managing the national infrastructure (Rete Ferroviaria Italiana – RFI S.p.A.).

Table 8: Port of Trieste - Global Project railway infrastructures

Port of Trieste - Global project		
Activity	Costs (EUR)	Available funds (EUR)

Upgrade of the “last mile” railway connection	67,000,000	67,000,000
Infrastructural upgrading in order to reactivate the railway track linking Aquilinia to Campo Marzio	28,000,000	18,000,000
Upgrade of the existing railway infrastructure and of the new station of Scalo Legnami	50,000,000	0.00
Infrastructural and technical upgrade of the Campo Marzio railway marshalling yard	32,400,000	0.00
TOTAL	177,400,000	85,000,000

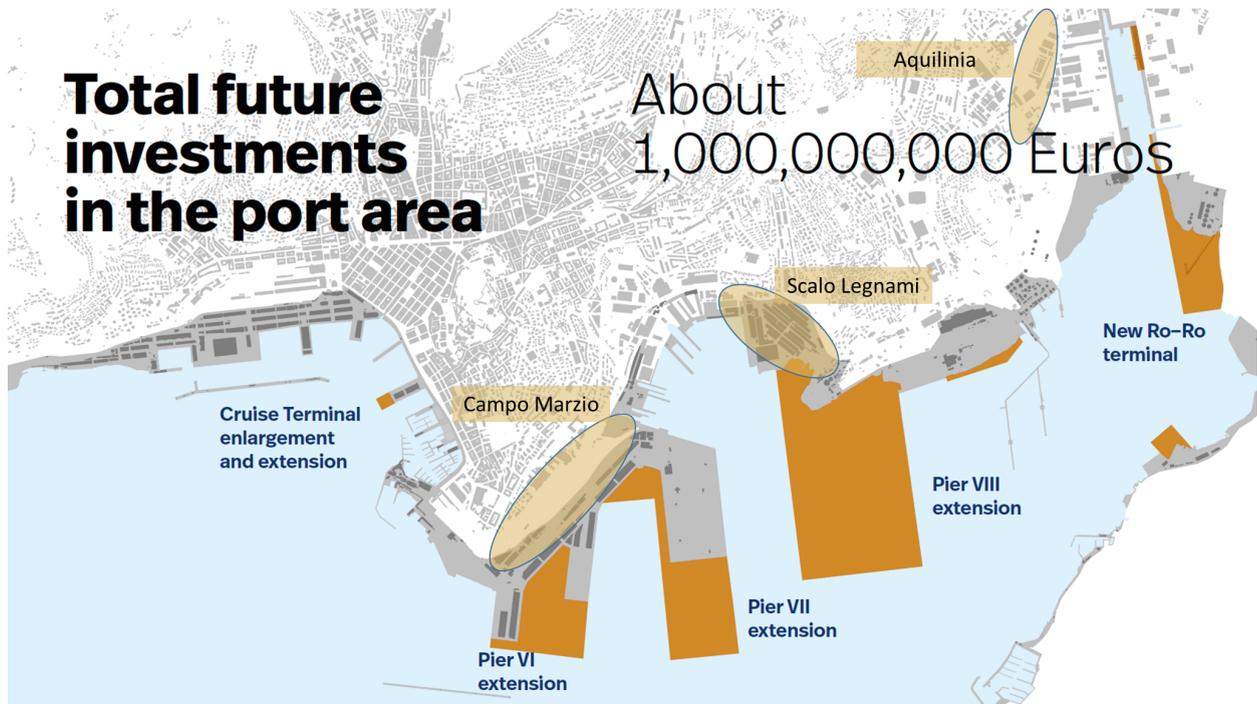


Figure 17: Port of Trieste - position of railway stations

Global Project's objectives are listed as follows:

- Removing bottlenecks from the railway network from/to the Port of Trieste.
- Increasing the capacity of the overall cargo handling capacity of the Port of Trieste, streamlining rail freight flows and overcoming the lack of space dedicated to the storage due to the port's proximity to the city of Trieste.
- Improving the competitive advantages of the southern route through the Port of Trieste towards the markets of Central and Eastern Europe. (By offering a valid alternative to the North European ports, by supporting a balanced regional development and a reduction of inequalities between north and south and by reducing the congestion of infrastructures linking northern ports).
- Enhancing the role of the Port of Trieste as a strategic factor for the growth and the competitiveness of the Adriatic-Ionian area.

- Developing the Port of Trieste, core node of the TEN-T network, by improving the accessibility to the hinterland.
- Improving the integration of the Port of Trieste into the central TEN-T network, in particular into the Adriatic-Baltic Corridor and the Mediterranean Corridor.
- Strengthening the development of the multimodal connections between the Port of Trieste and its hinterland.
- Increasing the efficiency and reducing the environmental impact of transport systems, providing in particular alternative means of transport that are sustainable and environment friendly.

As stated in previous sections, Piers V, VI (RoRo) and VII (container), which generate the most part of the port railway transport, are connected to the national railway network through “Campo Marzio” railway station. The RFI S.p.A. Company manages it through the railway marshalling yard, owned by the Port Network Authority of the Eastern Adriatic Sea. “Campo Marzio” railway station represent, therefore, the most strategic and sensitive part of the port railway network, affecting strongly the overall efficiency of the port.

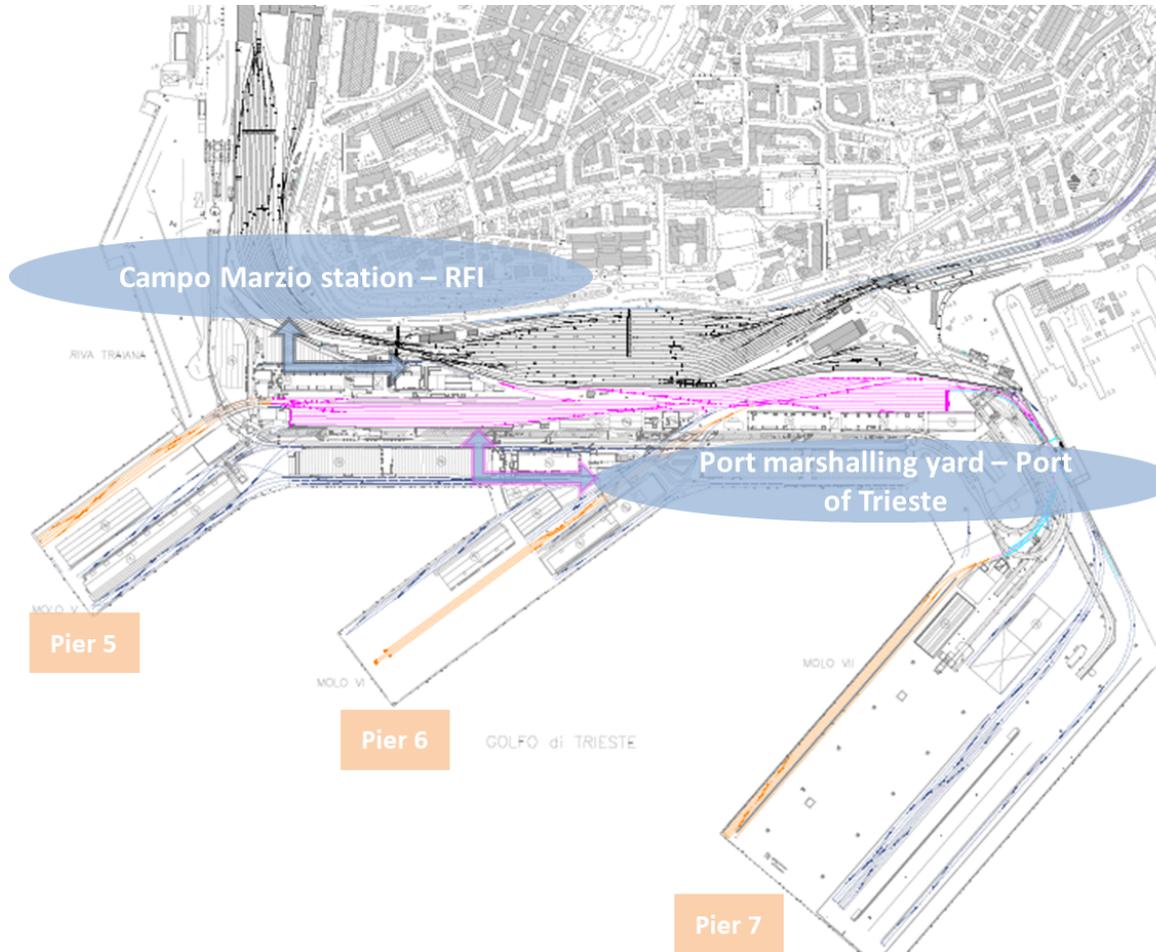


Figure 18: Port of Trieste - Campo Marzio node

The current configuration of Campo Marzio rail station (black in figure above) and of the truck lines managed by the Port of Trieste (pink in figure) hinders further development of intermodal transport to/from the port for several reasons:

1. Maximum train length is currently limited to 550 meters, while UE Regulations 1315/2013 require that corridors of Core Network should be capable of accepting 740-meter long trains.

2. It is not possible to maneuver at the same time trains from the port three main terminals. If three trains are ready together, two of them must stop and wait while the first uses the track lines managed by the Port.
3. Maneuvers in the marshalling yard are not automatized, thus causing delays and higher risks to security of operations due to possible human errors.

Italian government already gave funds to RFI S.p.A. (Italian railway infrastructure company) for improvements of Campo Marzio Station, where works should begin in current year (2019), but not for the Port of Trieste and its marshalling yard.

Therefore, even when RFI S.p.A. will complete its works, these will be useless if the marshalling yard in the Port of Trieste is not improved too.

Therefore the Port of Trieste began a project (“TriesteRailPort”), partially funded by “CEF blending 2017” Programme, for infrastructures improvements of the marshalling yard. The project will allow to:

1. Increase by 80% train maneuvering capacity in the marshalling yard of the Port of Trieste.
2. Allow creation of 750-meter long trains (increasing maximum length by 35%).
3. Increase speed of marshalling maneuvers by 35% on average (70% in pier VII).
4. Guarantee full IT interoperability with Port rail stakeholders.

Anyway, the Port of Trieste is also committed to the optimization of existing infrastructures, also considering his view as Network Authority after the inclusion of the Port of Monfalcone in its area of competence and the cooperation with the Intermodal terminal of Trieste and the other intermodal terminals in the Friuli-Venezia Giulia region. The evolutions foreseen for the Sinfomar Port Community System will allow further reductions of times needed for administrative procedures.

There are several activities of developments and integration pilot tests running. The Port Network Authority of Eastern Adriatic Sea is constantly busy in improving its ICT infrastructure. Among the priorities in ICT innovation for next years, there are:

1. Integration with Port of Monfalcone and Porto Nogaro.
2. Integration with intermodal terminals in region Friuli-Venezia Giulia (Cervignano, Gorizia and Pordenone) and in other Italian regions.
3. Evaluation of opportunities given by use of “blockchain” technologies for consulting and sharing data and documents to/from other ICT platforms, implemented in other strategic ports very advanced in their ICT infrastructure.
4. Integration with regional industrial areas, in particular the one in Trieste.
5. Interoperability with logistic operators, ports and intermodal terminals of other countries, both European and international.
6. Increase of number of users connected daily with the Sinfomar system.

Moreover, the Port Network Authority is involved in several working groups with high profile stakeholders. Foremost its participation to the International Port Community System Association (IPCSA).

Finally, the Port Network Authority is involved in several project activities of international cooperation and partnership, which were highly regarded by EU institutions. A proof of this is the fact that the Port Authority received project grants for 25 million EUR for activities aiming at new growth perspectives, particularly in ICT area.

These investments already led to several positive results. They allowed creating or buying and installing various new and innovative hardware of software components. In addition, these projects helped to identify new roads for development of the competitiveness of the port system, through studies tested in real environment regarding logistic or customs corridors, on road or rail.

C: Mapping out stakeholders

For the objectives of the project, and in particular for the realization of the foreseen pilot action in the Port of Trieste with the upgrading the PCS as to optimize the railway transport,

the main stakeholders are listed below. The following tables report their role and contribution to the project.

Table 9: Matrix of relevance of stakeholders

Port of Trieste – mapping out stakeholders / 1			
		Influence	
		Low	High
Interest	Low	Marginal Stakeholders: Importance = low	Relevant Stakeholders: Importance = medium/high
	High	Operative Stakeholders: Importance = medium/high	Key Stakeholders: Importance = high RFI S.p.A., Railway Undertakings, RRTs, Terminal Operators, Freight Forwarders, Customs Agency

Table 10: Classification of stakeholders

Port of Trieste – mapping out stakeholders / 2							
Name	Role	Importance	Benefits	Contribution	Conflicts	Current support	Strategies to improve support
RFI S.p.A.	Company	High	Adequate funds and coordination at local level	Implementation of the infrastructural works on RFI side.	Lack of implementation of their works	High	Continuous and regular meetings and feedbacks. Signature of specific MoUs.

Railway Undertakings	Operators	High	Reciprocity in data exchange	Commitment to exchanging data on trains	Possible filtering data	Med	Showing the added value of data exchange.
RRTs		High	Reciprocity in data exchange.	Commitment to exchanging data on trains.	Possible filtering data.	Med	Showing the added value of data exchange.
Terminal Operators	Operators	High	Reliability and continuity of data exchange.	Commitment to exchanging data on trains.	Possible filtering data.	High	Showing the added value of data exchange.
Freight Forwarders	Operators	High	Reliability and continuity of data exchange.	Commitment to exchanging data on trains.	Fear for privacy of commercial data.	High	Showing the added value of data exchange
Customs Agency		High	IT infrastructure supporting fast corridor	Support in the implementation of fast corridors	Not implementing fast corridors	High	Continuous and regular meetings and feedbacks

The topics of the project are of high importance for PNAEAS and thus are subject of continuous contacts and meetings with groups of local stakeholders in order to organize and plan future improvements. However, the first official project meeting with the stakeholders above identified will take place in October, organized in cooperation with the Interporto of Ferneti. It will be held in the form of “focus group”, in order to collect feedbacks, wishes, suggestions and interests of the stakeholders and involve them in the project. As PNAEAS is involved in other projects regarding similar topics it was decided to organize a common meeting under the “umbrella” of all the relevant projects in order to collect stakeholders views regarding them and their proposed activities.

D: Analysis of IT systems

The Port of Trieste leverages the potentialities of new technologies to optimize the use of existing infrastructures, thanks to the creation and constant improvement of its Port Community System (PCS).

A PCS is an electronic open platform connecting multiple ICT based networks/systems operated by different seaport organizations. The first PCSs were developed in the '70s and ' 80s in Germany, France and Great Britain. The main objective of a PCS is the optimization and harmonization of all port logistic processes through a 'single window system' concept. The system components are designed to enable a single data submission.

The port of Trieste is multimodal, with freight and logistics units arriving and leaving by ship, train and road as in following figure.

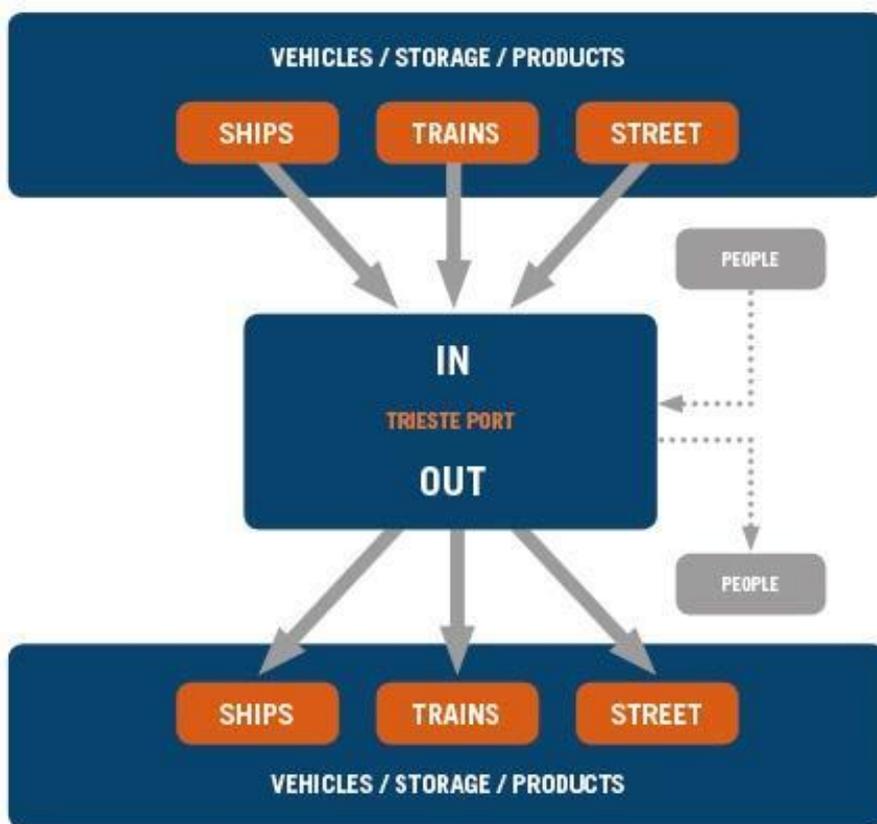


Figure 19: Movements in Trieste Port

As key nodes in international transport chains providing access to global markets, ports are more and more under constant competitive pressure to adapt to changes in the economic, institutional, regulatory and operational domains.

To face these challenges, modern EU and international port freight transport key protagonists recognize the deployment of web-based ICT solutions as key to improve the overall logistics processes providing operators, both from public and private sector, with a reliable, effective and efficient real time information management system.

In 2014, the Port Network Authority of the Eastern Adriatic Sea, within a co-financed EU TEN-T Programme project named “ITS Adriatic Multiport Gateway”, launched the design of a dedicated ICT platform, developed with the collaboration of all prominent actors in the Trieste maritime transport activity, achieving the implementation of “Sinfomar”, the Port Community Systems. Focus of the system is on intelligent and secure exchange of information between both private and public organizations, with the main aim to improve the competitiveness of the port of Trieste.

“Sinfomar” is an online platform for the management of all procedures regarding administration, taxation and customs related to port logistics.

In the design of “Sinfomar” it was necessary to consider the special legislative situation due to its position as a Free Port. The Free Port of Trieste currently includes five distinct Free Zones, three of which reserved for commercial activities (Old Free Zone, New Free Zone, Timber Terminal) and two used for industrial activities (Mineral Oils Free Zone, Zaule Channel Free Zone). As regards the customs regime, the Free Zones of the Port of Trieste enjoy the legal status of customs clearance exemption, which involves a whole series of beneficial operating conditions for the Free Port of Trieste. This is undoubtedly the biggest area of difference between the regulations of the Free Port of Trieste and national and EU ones.

The areas in the port are divided in common areas (under the control of the Port Network Authority) and areas given in concession (under the control of terminal operators and private companies).

The “Sinfomar” project involved fully the local and regional maritime world. In particular, among private operators, Shipping Agents, Freight Forwarders, Fleet Operators and Terminal Operators. On a lesser level, also some Fleet Operators and the surveillance companies were involved. Regarding the institutions, the following actors were involved in the project: Customs Agency, Harbor Masters, Finance Police, Sanitary Inspection Authority and the regional dry ports. Particularly, Ferneti’s dry port in Trieste has become the strategic intermodal terminal for the port. In addition, some particular actors were involved, such as Alpe Adria (regional Multimodal Transport Operator), Rail Cargo Austria (railway undertaking), Adriafer (society of railway maneuver) and the University of Trieste (interested in the analysis of logistics data regarding the port of Trieste).



Figure 20: Main stakeholders involved

According to Customs Agency, “in order to perform an import/export operation in Italian territory, operators must present, beyond the customs declaration, up to 68 requests to 18 administrations”. This means economical operators must fill a number of requests and forms, which often must be consigned physically on paper, in order to receive the authorizations, licenses, permits and “nihil obstat” needed for the freight movement, with higher expenses and longer awaiting times of deposit of freight in terminal areas.

From the point of view of public institutions, the growth of traffic volumes in last decades means treating an ever-growing number of acts and paper documents, thus needing a

remarkable number of workers to manage the paperwork. Moreover, lack of shared standards and of coordination causes further slowing down of freight fluxes and hampers the overall national competitiveness. At the light of such considerations, and in synergy with national and EU interests regarding strategic importance of ports, digitalization of the sector has become a priority objective, to reach through a progressive dematerialization of procedures (paperless) and use of shared standards capable of managing and optimizing the information fluxes between the different actors. “Sinfomar” was the first PCS in Italy to be recognized and connected with the ICT system implemented in 2003 by the Customs Agency called “AIDA” (Automazione Integrata Dogane Accise - Integrated Automation Customs and Excise Duties). With the implementation of AIDA system the Customs Agency provided a “single window” as connection point where all information is declared just once and made available to all national and European relevant subjects/bodies – each for the parts of its own competence.

As stated above, “Sinfomar” is active since 2014. The private operators enter in real time all the data present in the system. Subsequently the relevant public authorities, such as the local Customs Agency or Finance Police offices, validate the data while performing their checking operations. Such verifications certify the reliability of data. The information and data, further elaborated by Sinfomar software, are important not only for the daily management of port operations but also for statistical information, driving strategic decisions.

1. Architecture models

Regarding the architecture type, the Sinfomar system is a central orchestration hub. All the connected parties or stakeholders can insert data via web services or browser interface and can access to data of their pertinence through browser interface. Several access roles are foreseen (admin, port user, normal user). In general the kind of data that can be inserted or seen are customized according to the user and user can only see a view of the database limited to the data of his pertinence and/or responsibility.

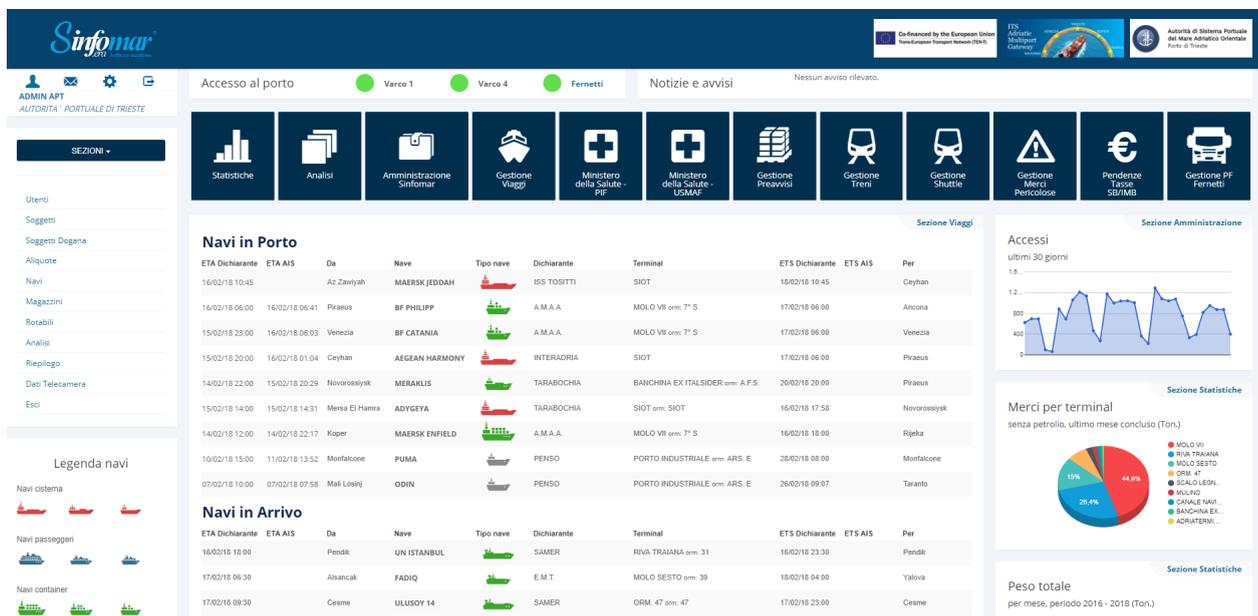


Figure 21: Sinfomar - main screen

From the technical point of view, Sinfomar is structured in modules and sub-modules and is based upon free and Open Source international languages and standards. In particular, it relies heavily upon technologies linked to web services and use of XML.

A fundamental aspect of the software is that it is in constant development, in order to guarantee the adaptation of its functionalities to the dynamic changes occurring in the various transport systems and the freight volumes in the Port of Trieste. The constant effort in adapting the "Sinfomar" also has the priority objective to ensure full conformance of the software to

current national regulations and to international rules and guidelines regarding customs, sanitary and security.

Among its main capabilities, Sinfomar allows to:

- Manage electronically cargo handling and their vehicles, both in entrance and exit, for each type of vehicle used (ship/train/truck), allowing for traceability and immediate logistic individuation in port area.
- Allow automation of access application submissions through the “single-window” paradigm. In this way administrative and bureaucratic procedures related to port traffic become quicker and more fluid. It is possible to insert all data in the system automatically, without need of manual insertion.
- Foresee the possibility of telematics declarations that progressively will involve all actors present in the Port Community, such as Customs Agency, Harbor Master, Finance Police, Maritime Agencies, Shipping Agents, Terminal Operators, Railway Undertakings and Fleet Operators.
- Produce comparative analyses and statistical data, both aggregated and disaggregated, without the need to rely on external platforms to create a database.
- Guarantee interoperability with ICT platforms developed and implemented by other stakeholders, both public and private, to manage and optimize the logistics supply chain. Among such systems there are: AIDA (Customs Agency), PMIS2 (Harbor Masters), TROVATORE (Customs Agency), i-Gate software (Digital Port) which has become part of the larger Vigate platform (by Vitrociset S.p.A.), Terminal Operating Systems used by other terminals, such as NAVIS platform (Trieste Marine Terminal) and SINFOSEC (Ferneti, Trieste Intermodal terminal).
- Manage data using international standards (ISO - International Organization for Standardization. TARIC - integrated Tariff of the European Union. HS - Harmonized System. ILU - Intermodal Loading Units in Europe. BIC - Bureau International des Containers et du Transport Intermodal. UIC Union Internationale Des Chemins De Fer) in order to standardize data and make them comparable even when coming from different fields and transport modalities (for example, ship or train). ‘Sinfomar’ can rielaborate

codes generated by third party systems and transform them, if necessary, in standard codes.

- Manage and optimize logistics, security and customs processes in the Port of Trieste and in its Free Zone.

Sinfomar relies by design on a set of operational Modules, following the general schema seen in figure below.

1. Pre Arrival/Departure Notifications
2. Ships
3. Cargo
4. Vehicles
5. Trains
6. Statistics/Analysis
7. People
8. Maritime Health Authority
9. Dangerous Goods
10. Taxes on loading/unloading
11. External Free Zone Terminal-Area

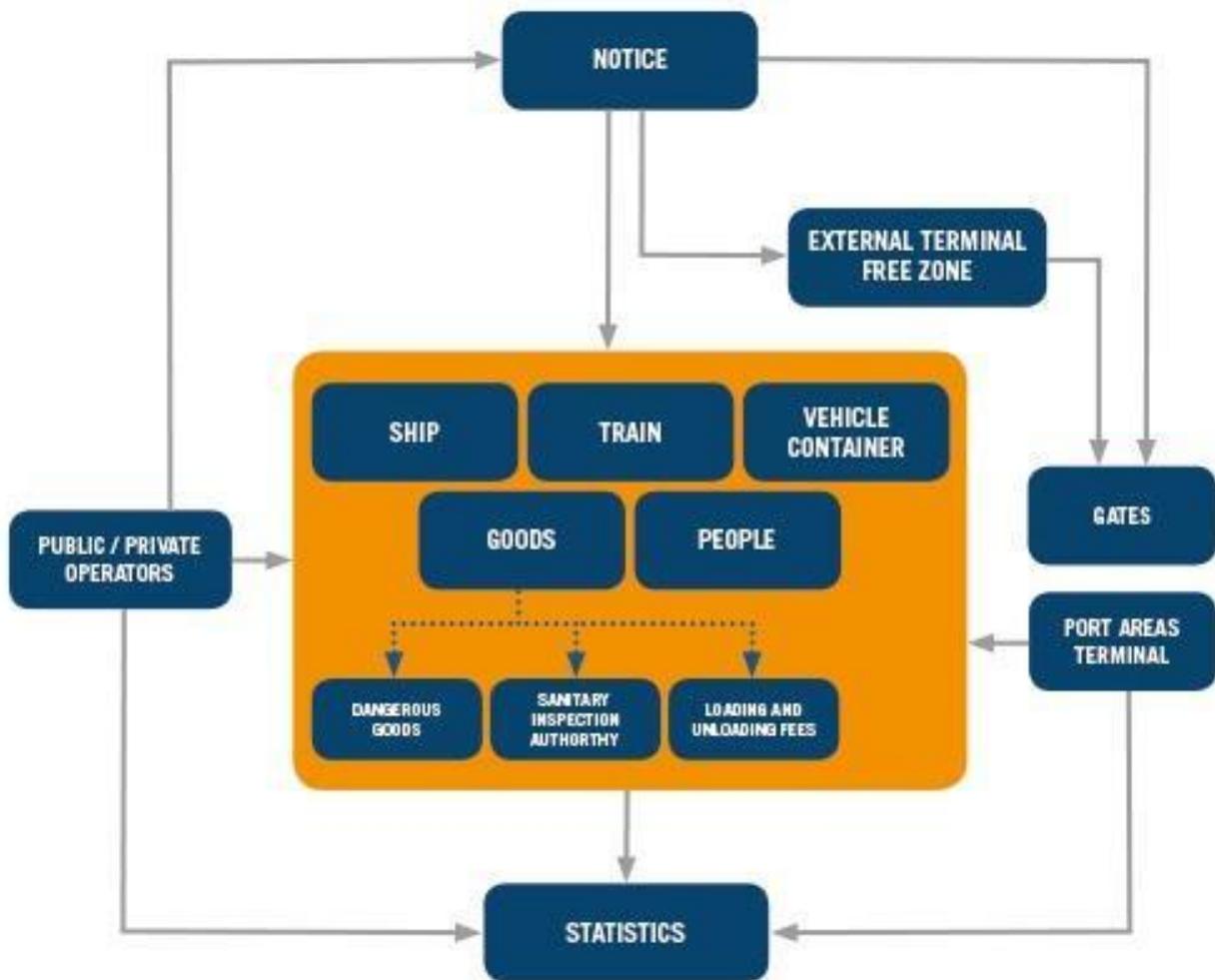


Figure 22: Sinfomar modules

One of the most relevant modules, particularly considering the strong modal shift towards rail in the Port of Trieste (as seen in previous chapters), is the Train module.

This module manages trains arriving or leaving the Port of Trieste and is fully integrated with all the other modules involved in rail traffic, particularly with the Ship module. The rail

entrances to the port are equipped with OCR systems for the control operations for train entrance or exit. Such systems can recognize ILU codes for rolling stock, BIC container codes and UIC wagon codes.

Since January 1st 2018 a further step was taken towards total dematerialization of check and authorization operations for train movements. Train movements were considered equal to ship movements, with common and uniform rules for customs, logistics and security through standardization and automatic generation of all documents for train arrival or departure.

In order to allow the full tracking of any container/vehicle/cargo arrived by train and departed by ship or vice versa, the railway undertaking company (or its representative) must show, for each train to/from the Port of Trieste, a customs manifest of all freight on it using the, so called, CH30 module.

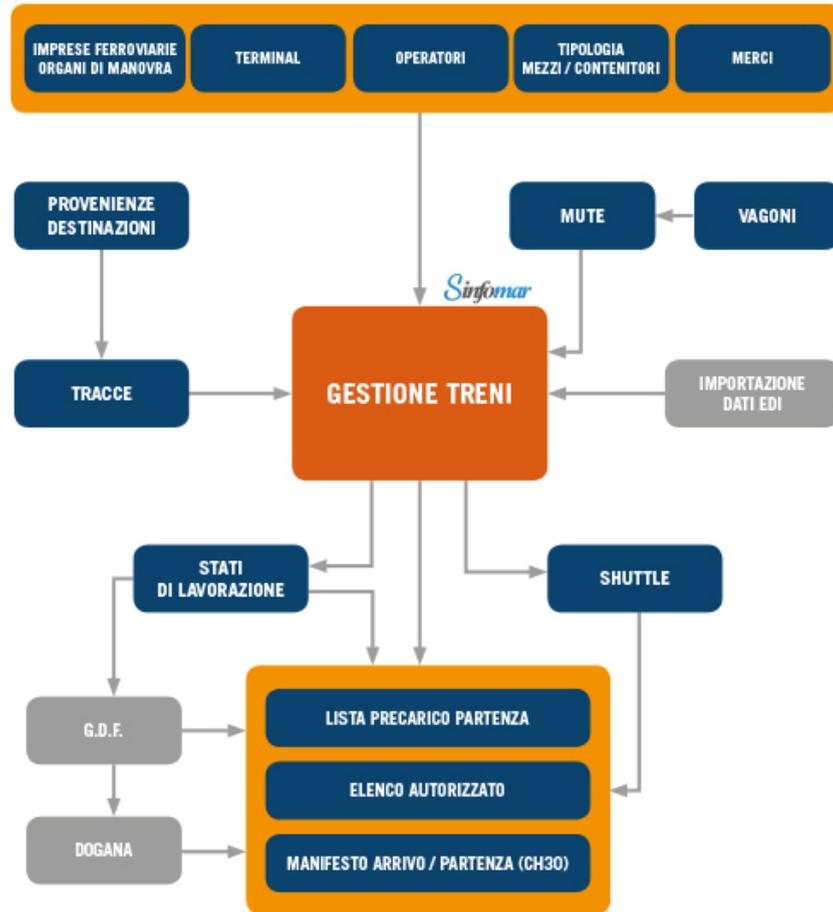


Figure 23: Sinfomar - Train module

This process sees several operators involved:

- Railway undertaking and maneuvers companies.
- Multimodal Transport Operators (MTO).
- Terminal Operators.
- Shipping Agents and Freight Forwarders.
- Customs Agency and Finance Police.

The CH30 module is a specialized “train consignment note” historically used in the free port of Trieste. In the past there used to be up to 13 different CH30 models with non-standardized data, so not comparable with each other. Today Sinfomar allows for a single format CH30, agreed with the operators and Customs Agency according to objective criteria and prepared using a shared structure and terminology.

Such standardization led to excellent results, lowering errors to almost zero and a huge increase in easy data interchange between the various public and private operators. Moreover, this shared and standardized structure eliminated any subjective “interpretation” of data.

The simple presence of bar codes containing the Customs reference for Movement Reference Number (MRN) of the train cargo manifest allowed Customs operators to close operations on their AIDA system by simply using a handheld barcode scanner. In this way the time for data acquisition about a single train dropped from 10/15 minutes to less than one minute, reducing also to zero errors due to manual data insertion.

Moreover, this allowed a complete tracking of all cargo and logistic units containing it.

MMTP CH30 PF - TRENO IN PARTENZA

spedizione: TR5.0301P

allibramento Sinfomar 870204 del 28/01/2018

agente: SAMER & CO SHIPPING SPA

treno nr.: 41850

diretto a: Krefeld

di data: 29/01/2018 ora: 04:50

in arrivo da: SAMER SRAPORTS TERMINALS

Pos.	Vagone	Targa n. container	Merce	Semirimochio/Container			Sigilli	UNDO	Tipo documento	Numero documento doganale	Nr. Sinfomar
				Massa	Tara	M. lorda					
6	338549926412	ILU : NEDR1001444 Targa: /34 KJ 2868	GOMMA E LAVORI DI GOMMA HS: 4016 95 00	19.591	7.500	27.091	00723209		TI/MEN	 TI/MEN: 18TR16010000027903	870199
		ILU : GERAD000080 Targa: /34 PV 1764	FILATI SINTETICI HS: 5402	19.388	7.500	26.888	00660739		TI/MEN	 TI/MEN: 18TR27010000071379	870195
7	318049536549	VAGONE VUOTO									
8	378049520455	VAGONE VUOTO									
9	378049563109	VAGONE VUOTO									
10	378049525280	CNTR : EIBB4508410	TESSUTI IMPREGNATI, SPALMATI HS: 5909 00 10	14.145	4.000	18.145	05118866		TI/MEN	 TI/MEN: 18TR34120000085705	870196
		CNTR : EIBB4509612	LAVORI DI CHISA, FERRO HS: 7307 19 90	11.600	4.000	15.600	0518708		TI/MEN	 TI/MEN: 18TR34120000085713	870189
11	318049610310	CNTR : SANU7966377	VEETURE AUTOMOBILI, TRATTORI HS: 8708 29 90	2.491	4.000	6.491	01472006		TI/MEN	 TI/MEN: 18TR41030000023815	870192
		CNTR : EIBB4509443	LAVORI DI CHISA, FERRO HS: 7306 19 10	22.740	4.000	26.740	00739127		TI/MEN	 TI/MEN: 18TR16040000017517	870190
12	318045563596	CNTR : SANU7960255	MACCHINE ED APPARECCHI ELETTRICI HS: 8516 79 20	9.300	4.000	13.300	05118410		TI/MEN	 TI/MEN: 18TR34120000083476	870191
13	378049563000	VAGONE VUOTO									
14	378049563034	VAGONE VUOTO									
15	338549926248	VAGONE VUOTO									

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del Mare Adriatico Orientale
Porto di Trieste



Figure 24: Sinfomar - example of CH30 module

The CH30 module is the instrument that will allow the creation of logistic and (when regulations will allow) customs corridors between the Port of Trieste and intermodal terminals in Central Europe. Preliminary test activities towards this were developed in other Interreg projects and are already in an advanced stage.

2. Implementation stage

In the design and implementing of ICT systems, literature identifies four stages:

1. Project initiation.
2. System analysis and design.
3. Pilot implementation
4. Implementation and adoption.

5. Maintenance and growth.

Stage 1 requires the involvement of all stakeholders with the collective goal of an inter-organizational information system to intelligently process and redistribute information to organizations that participate in the network. This requires also willingness to exchange company information with other partners in the supply chains while setting the project objectives and scope. This already happened since the beginning of Sinfomar project.

Stage 2 requires the design of the information system architecture, mirroring the organizational context to avoid any radical change but rather automating and facilitating existing operations and technology. Sinfomar achieved this objective also by use of a strictly modular architecture.

In Stage 3, the progressive adoption of the system by the stakeholders was facilitated by the fact that the Port Network Authority pushed strongly towards the use of the system, given in free use to stakeholders, in order to accelerate the switch towards paperless procedures.

From the description of structure and development of Sinfomar in previous chapter, it should be clear that its stage of development is the fourth and the system is already in a mature stage. Yet the development somehow has also a “spiral development”, in the sense that each addition of new functionalities and modules requires to follow again steps 1-3 for that particular activity.

3. Usage by and impact on freight agents

Sinfomar system is currently widely used by all stakeholders involved in the supply chain in the port of Trieste and its network. In fact, also nearby dry port of Ferneti uses it and in current and future developments it will connect also the port of Monfalcone and will be used to exchange information with all the logistic nodes and dry ports which have train connections with the ports of Trieste and Monfalcone.

Currently users from over 150 different companies and private or public bodies are registered users of the system. On average about 750 single users connect daily to the system in working days (about 250 also during weekends).

E: SWOT Analysis

This section reports the strategic evaluations about the Port of Trieste and Friuli-Venezia Giulia Autonomous Region using the SWOT analysis instrument. The conclusions based on this baseline study and on the role of the above-mentioned stakeholders are summarized in the following table:

SWOT	
Strenghts (S)	Weaknesses (W)
<ul style="list-style-type: none"> FVG Region boasts the presence of several multimodal logistics platforms (3 ports and 4 RRTs), a consistent infrastructural endowment for a region of only 1.2 people. Overall, the level of the infrastructure is good without criticalities in terms of operation and maintenance. The level of cooperation among institutional players and private operators is generally good with a constant exchange and sharing of opinions and experience. 	<ul style="list-style-type: none"> The governance of the regional logistics infrastructure is still fragmented. The last mile connection (linking to the national railway network) must be strengthened due to the increasing volumes of traffic. High costs for last mile connections among nodes.
Opportunities (O)	Threats (T)
<ul style="list-style-type: none"> Increase of the volumes of traffic in the next fifteen years. Strong interest expressed by major international investors interested in investing in the infrastructure of the Port of Trieste. 	<ul style="list-style-type: none"> Strong competition at national and international level in the field of maritime and intermodal transport. Weak awareness of the possibility of using intermodal transport units (ITU) and considering intermodality as a possible alternative, essential for modal shift.

<ul style="list-style-type: none"> • Availability of European and national funds for the strengthening of port and inland port infrastructure. 	
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F: Main results

To sum up, this Territorial Needs Assessment highlights the following conclusions that should be taken into consideration for the future activities in the PROMARES project:

- Friuli-Venezia Giulia Autonomous Region boasts the presence of several multimodal logistics platforms – i.e. four rail-road terminals (RRTs) and three ports, a consistent infrastructural endowment for a region of only 1.2 million people. However, this logistics system needs more coordination in the operational-, governance- and ICT field.
- The Port of Trieste is the first Italian port for maritime and intermodal traffic. This is a considerable advantage in terms of competitiveness of the regional territory, as well.
- Compared to other Italian ports, the Port of Trieste already registers a relevant modal shift.
- Intermodality plays an important role in the medium and long-term development strategies carried out by the Port Network Authority of the Eastern Adriatic Sea and the private terminal operators of the Port of Trieste. Moreover, it is essential for implementing the catchment area of the Port of Trieste in order to reach the Central and Eastern European markets.
- Infrastructural bottlenecks hindering intermodality related, in particular, to the shunting yard of Campo Marzio in the Port of Trieste have to be eliminated.
- Administrative bottlenecks have to be removed, as well, by developing innovative ICT tools and solutions whose aim is to optimize the use of the existing infrastructure.
- In order to optimize the use of the existing infrastructure, it is advisable to invest in new technologies.

- The subsidy regime for intermodal transport should be extended even to the short distances, in order to allow a better connection between regional logistics nodes and, overall, support the modal shift.