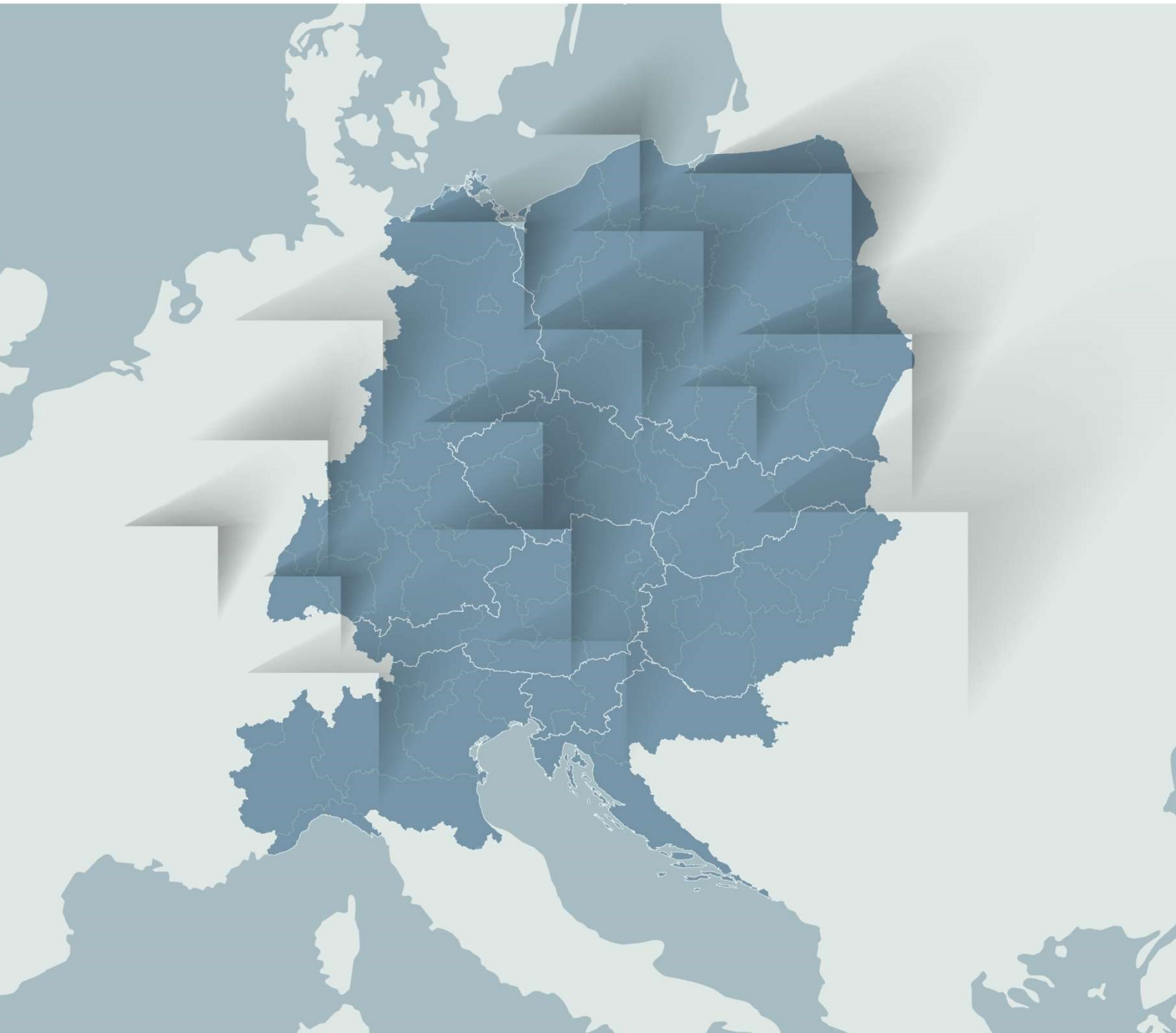
COMODALCE - *Enhancing Coordination On Multimodal Freight Transport in CE*

Transnational Territorial needs assessment *Version 1*

D.T1.2.1 *02|2020*



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1. Introduction, aim of document

Methodology for the implementation of Territorial Needs Assessments (TNA) prepared by WP Leader, this report aims to analyse the territorial needs for the ports of COMODALCE project in the field of multimodal freight transport and ICT.

The scope of this study is to analyse the territorial needs assessment reports of COMODALCE project partners.

Chapter 2 – Territorial Analysis introduces the status quo in the ports COMODALCE project partner ports focusing on multimodal freight transport and ICT.

Chapter 3 - Stakeholder mapping and management identifies the key stakeholders and elaborates measures how to manage them.

Chapter 4 - SWOT analysis serves to identify key internal and external factors perceived as important to achieving project objectives as they stem from previous project activities. All relevant elements are divided into two main categories:

- Internal factors — Strengths and Weaknesses

- External factors —Opportunities and Threats

Chapter 5 - The collection of needs identified by the Project Partner or the involved stakeholders.

Chapter 6 – Conclusions

2. Territorial Analysis

2.1. General introduction of COMODALCE project areas

The COMODALCE project partners cover the Central European region as multimodal freight transport logistics centres. They have up to date and professional experience regarding to the project aims, and their territorial needs can be representative for the whole Central European region. In this transnational territorial needs assessment (transnational TNA) the following regional territorial needs assessment (regional TNA) are analysed which are prepared by the COMODALCE project partners (listed in North – South order):

1. Port of Gdynia (Baltic Sea)
2. Port of Rostock (Baltic Sea)
3. MAHART Container Centre and Hungarian Danube Ports (the Danube River)
4. Port of Trieste (northern Adriatic Sea)
5. Port of Koper (north-eastern Adriatic Sea)
6. Quadrante Europa Freight Village (Inland intermodal terminal Verona)
7. Port of La Spezia (eastern Ligurian Sea)

All of these logistic centres are located on TEN-T corridors and play significant role in the European freight transport. The corridors concerned:

- Baltic Adriatic
- Mediterranean
- Orient/East-Med
- Scandinavian - Mediterranean

1. Figure: COMODALCE project partners on a TEN-T corridor map

All of the analysed logistics centres have its own geographical features, which define the characteristics of their logistics activities.

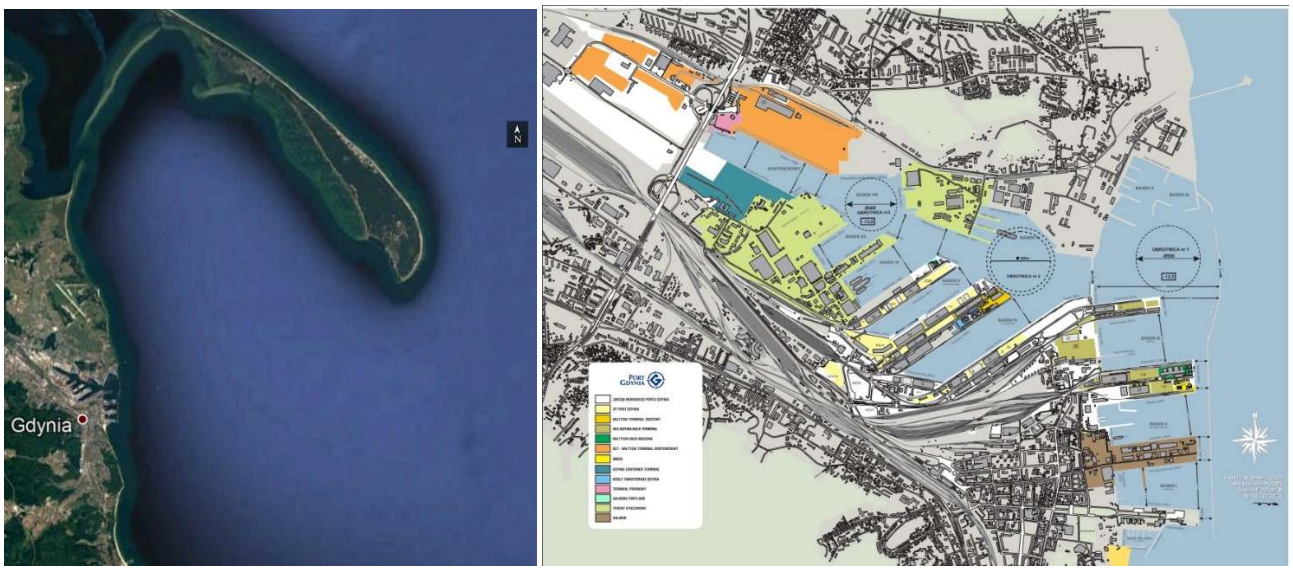
The analysed logistics centres can be divided into three categories according their spatial location.

- Sea port: Multimodal centre, which connects the land transportation (road, rail, inland waterway) to the sea transportation (short sea shipping, intercontinental shipping, etc.). Besides linking the three modes of transport, cargo handling management (physical and customs/other administrative procedures), storage, and ship operation services (refuelling, repair, etc.) play an important role in port's activities.
- Inland ports: Multimodal centre, which connects road, rail and inland waterway transportation. Typically the transhipment between two transportation modes, the storage and the cargo handling management are the main activities. In addition, several ports provide transport vehicle operation services (refuelling, repair, etc.) and industrial park services.
- Dry port: Intermodal centre, where road and railway transportation connects. Transhipment of cargoes, cargo handling management and storage are the main activities. Works as cargo distribution hub, serving the road and rail transportation.

2.1.1. Sea ports of COMODALCE project for territorial needs assessment analysis

2.1.1.1. Port of Gdynia

The port have been built in the 1920s, as the youngest Polish big strategic port. It is located in south coast of Baltic Sea in Gdańsk Bay, and has very favourable navigation conditions. The roadstead is protected by the Hel Peninsula, which is a natural shield for the anchored vessels and by the 2.5 km long outer breakwater. The 150 m wide and 14 m deep entrance to the port make it easily accessible from the sea.



2. Figure: Port of Gdynia

Source: Google Earth and Gdynia Port Authority

The Port of Gdynia is a warm water port, where there are no tides. The water level may rise by 60 cm during the strong westerly winds, or fall by about 60 cm during strong easterly winds. Pilotage is compulsory for the vessels over 60 meters in length. Towing is also compulsory for the vessels over 90 m in length and for over 70 m long ships carrying dangerous cargo. Vessels over 40 m in length shall be assisted by the port mooring workers.

It is an universal modern port specializing in handling general cargo, mainly unitized cargo transported in containers and in a ro-ro system, based on the well-developed network of multimodal connections including hinterland, regular Short Sea Shipping Lines as well as ferry connections (ferry terminal).

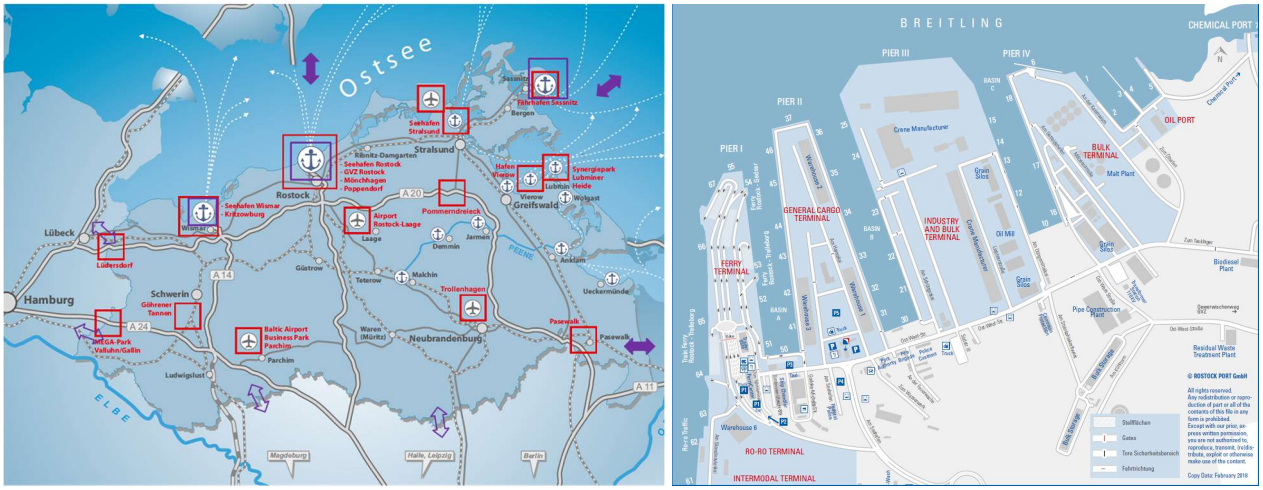
Main properties of port:

Port area [hectares]	621
No. of terminals	10
No. of terminal operators	8
No. of berths	115
Length of quays [km]	11
Max. length of ships [m]	200
Max. draft of ships [m]	13
Internal rail network length [km]	N.A.

2.1.1.2. Port of Rostock

Port of Rostock is located along the Southern Baltic Sea in a triangle between the Sweden, Hamburg and Western Pomerania (Poland). High-capacity motorways connects the state with other countries and important growing industrial regions. A relatively dense rail network (in relation to the number of cities and population) allow convenient travel across the state.

From an European point of view, the Federal state of Mecklenburg-Vorpommern is part of two core-network transport corridors: Orient-East Med and Mediterranean-Scandinavian. Both start or end in Rostock, the biggest city of the state, and underline the position of the city as well as the state as important hub for any transport flow between Central or South-East Europe and Northern Europe.



3. Figure: Port of Rostock

Source: Port of Rostock

Port of Rostock the largest universal port on the German Baltic Sea coast, with outstanding nautical conditions. The protected location of the port at the mouth of the Warnow River on the Baltic Sea and the sea channel with a length of 3.6 nautical miles long and depth of 14.5 m allow a very easy approach. Tides do not exist here, however, strong winds may change the water level by ±1.5 m. The navigable water is kept open as long as possible in winter and only very seldom freezes over completely. Pilotage is mandatory

in the area of the seaport for ships greater than 100 m in length or 15 m in width or with a draught of more than 7.5 m as well as for all tankers (oil, chemicals, gas).

Port of Rostock has abilities to handle various kinds of freight including heavy lift, dry and breakbulk cargo, oils, fuels as well as paper and ro-ro. The most notable commodities are steel products, nonferrous materials, plaster boards, projects cargo and cement. The port does not handle containers.

Main properties of port:

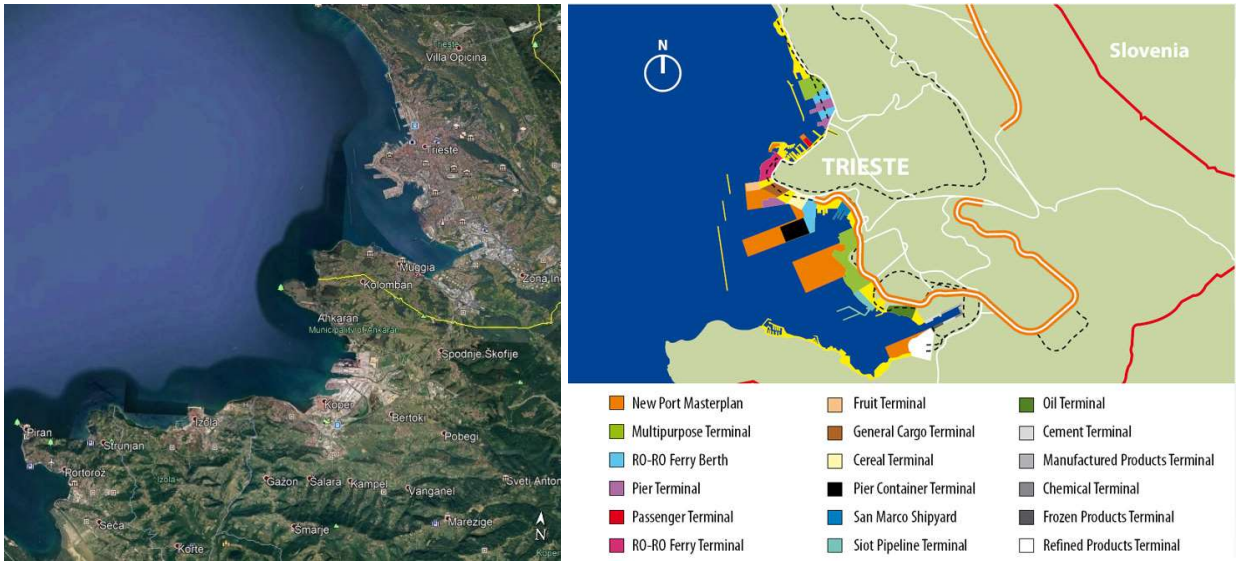
Port area [hectares]	750
No. of terminals	8
No. of terminal operators	18
No. of berths	47
Length of quays [km]	11
Max. length of ships [m]	300
Max. draft of ships [m]	13
Internal rail network length [km]	N.A.

2.1.1.3. Port of Trieste

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

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

- Deep seabed and optimal nautical accessibility.
- 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.



4. Figure: Port of Trieste

Source: Google Earth and North Adriatic Ports Association

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.

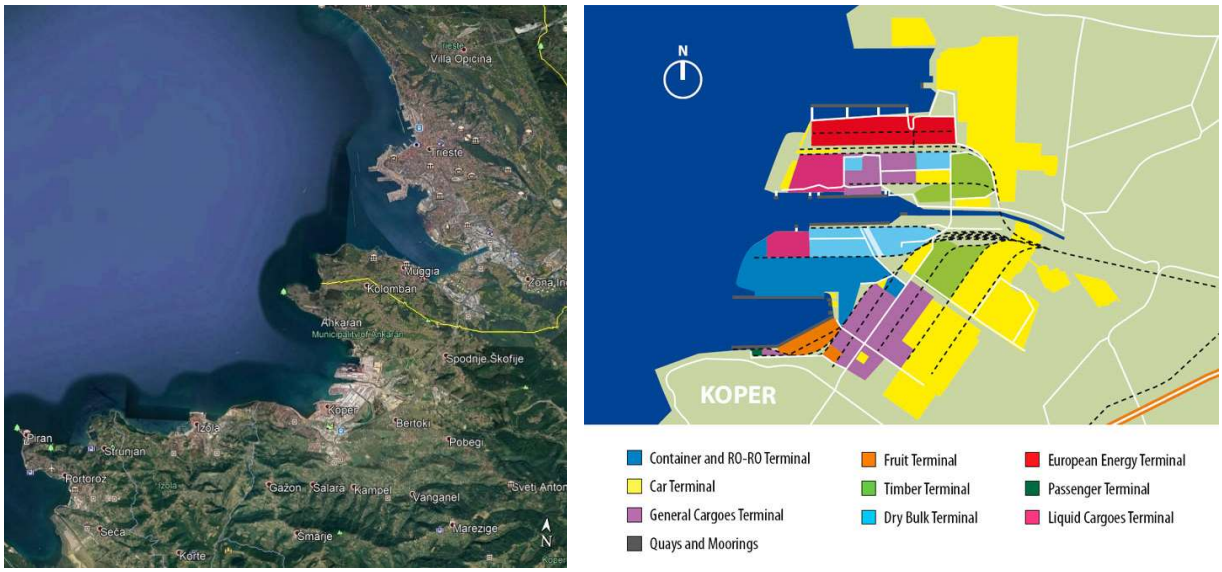
The main feature of the Port of Trieste is represented by its legal regime of Free Port, kept in application of the rules of the Paris Peace Treaty (Annex VIII). According to it, the Free Zones of the Port of Trieste enjoy the legal status of customs clearance exception and do not belong to the customs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

Main properties of port:

Port area [hectares]	230
No. of terminals	20
No. of terminal operators	24
No. of berths	58
Length of quays [km]	12
Max. length of ships [m]	No limit
Max. draft of ships [m]	18
Internal rail network length [km]	70

2.1.1.4. Port of Koper

Port of Koper lies on the shore of the Gulf of Koper in the northern Adriatic Sea, Koper lies approx. 10 km SSW of Trieste and 80 km SW of Ljubljana. The only big seaport of Slovenia is also an important seaport for the landlocked countries in Central Europe. The port of Koper is very railway oriented (modal split of approx. 60%) and also a relevant part of future traffics further counts on an efficient railway support.



5. Figure: Port of Koper

Source: Google Earth and North Adriatic Ports Association

The basic activities performed in the Port of Koper are cargo handling and warehousing. They are conducted in 10 terminals specializing in handling and warehousing various types of goods, such as containers, general cargo, foodstuffs, light-perishable goods, livestock, RO-RO, timber, dry bulk and liquid cargoes.

Port services are available day and night, 365 days a year and can be adapted to individual customer's needs. Beside handling and storing, goods can be prepared for immediate sale, protected and their form of transport can be changed to suit all specific requirements.

Main properties of port:

Port area [hectares]	280
No. of terminals	12
No. of terminal operators	12
No. of berths	26
Length of quays [km]	2.9
Max. length of ships [m]	367
Max. draft of ships [m]	14.5
Internal rail network length [km]	35

2.1.1.5. Port of La Spezia

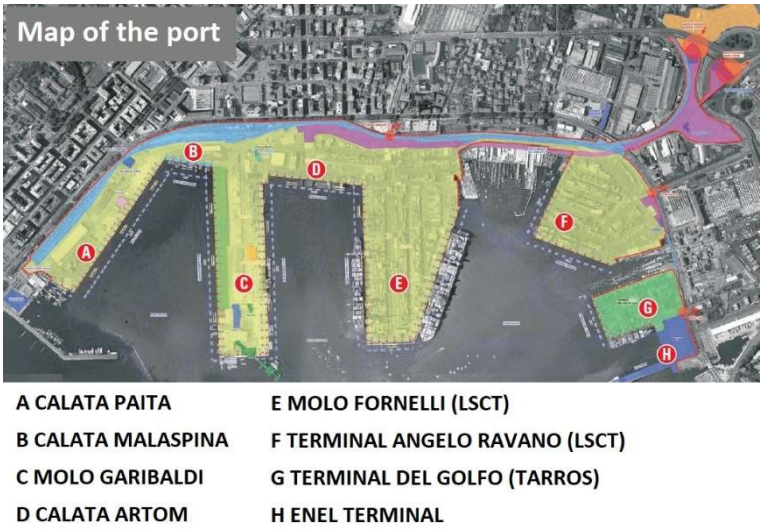
In accordance with the recent Italian port reform law of Aug 2016, the previous regional port authorities of La Spezia (Liguria Region) and Marina di Carrara (Tuscany Region), located at the Eastern Ligurian Sea, have been merged under a unique institutional body, in order to carry out the common mission of planning, controlling, coordinating and promoting all ports and commercial activities. The new institutional body is named "Autorità di Sistema Portuale del Mar Ligure Orientale" (ADSPMLOr), meaning "Port Authority of Eastern Ligurian Sea".

6. Figure: The port system La Spezia – Marina di Carrara

Source: ADSPMLOr

Thanks to its strategic geographic location, La Spezia is one of the most important ports in the Mediterranean Sea and it is the second largest Italian container port for direct access to the production and consumption markets in northern Italy, with weekly maritime connections to all the continents in the world.

The Port of La Spezia boasts marine weather condition which is unique in the Mediterranean and this makes it one of the safest harbour all year long. Its coastline, naturally protected from the winds and currents, the ease of mooring, the low number of tugs necessary, together with the short distance between the pilot station and the quays, allow a noticeable reduction in costs for both goods and passenger maritime traffic.



7. Figure: Port of La Spezia

Source: La Spezia Port Authority

La Spezia is moreover part of a large port cluster embracing other important sea economy sectors, such as shipbuilding, yachting, tourism, aquaculture and represents one of the most significant economic reality of the Ligurian territory, with about 8.000 employees.

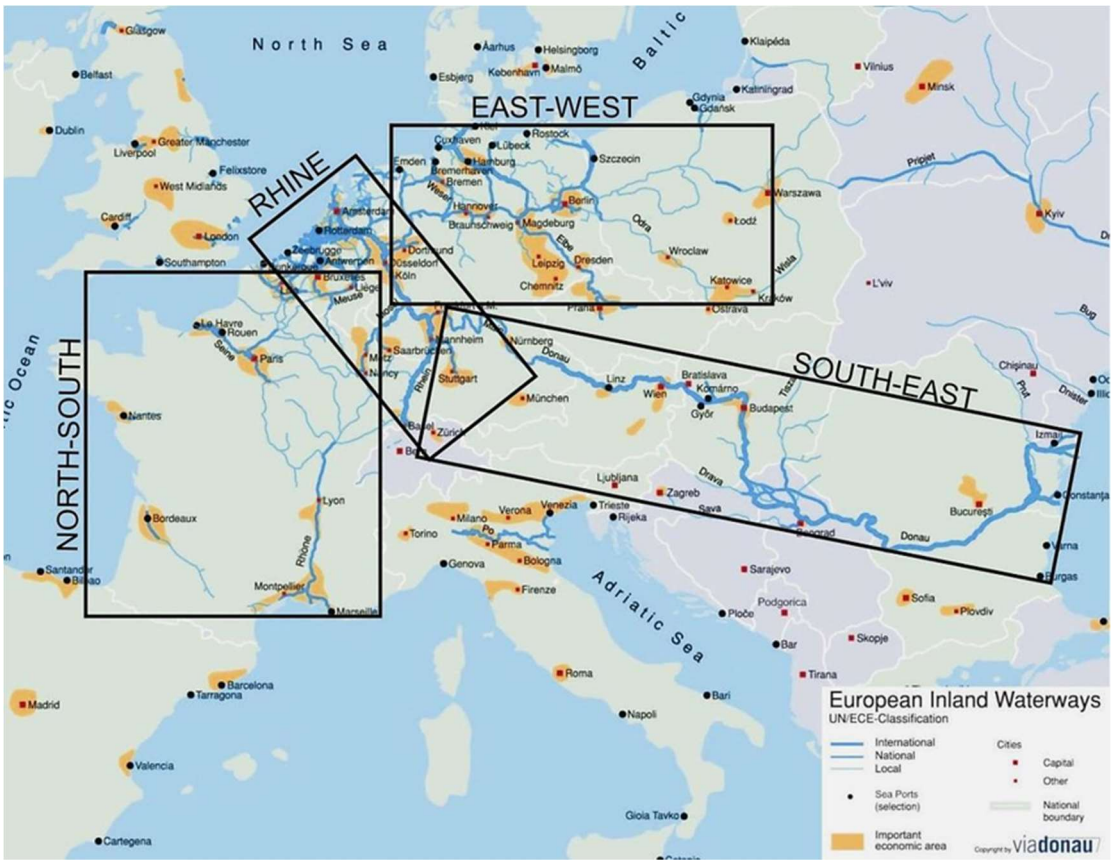
The Gulf of La Spezia has unique characteristics, with the presence of the Navy Base and the Military Arsenal which have allowed to develop in the last decades a very important defence industry.

Main properties of port:

Port area [hectares]	150
No. of terminals	9
No. of terminal operators	11
No. of berths	N.A.
Length of quays [km]	5.1
Max. length of ships [m]	N.A.
Max. draft of ships [m]	14
Internal rail network length [km]	17

2.1.2. Inland ports of COMODALCE project for territorial needs assessment analysis

The inland waterway transportation in the EU can be divided into four regions, which connect each other.

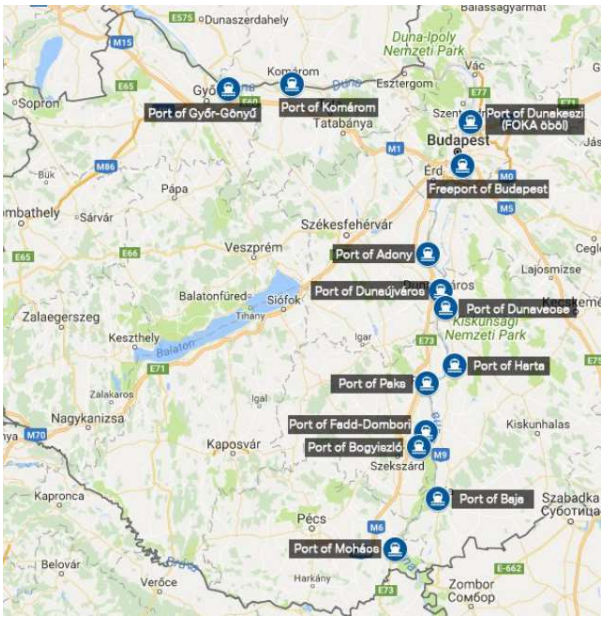


8. Figure: European inland waterways

Source: Via Donau

The South-East region is the Danube and its tributaries, belonging to the TEN-T Rhine-Danube (No. VII.) corridor. Danube is the second longest river in Europe, having 2415 km fairway. The capacity of the Danube waterway is a key factor of the inland navigation system and is determined mainly by prevailing nautical conditions (low water level is frequent on middle and lower Danube stretch).

In COMODALCE project the inland ports type logistics centres are represented by the Hungarian Danube ports, which are belonging to the middle Danube section.



9. Figure: Main Hungarian ports

Source: Hungarian Federation of Danube Ports

Inland ports facilitate the combination of the transport modes waterway, road and rail. Working in multimodal logistical chains, rail and road act as partners to waterway transport by enabling pre- and end-haulage operations with ports fulfilling their role as an essential interface. Over the last few decades, ports on the Danube have undergone a substantial transformation from conventional inland ports to modern logistical hubs. In addition to their basic function as transhipment hubs and storage sites, ports today provide a broad range of logistical services including commissioning, distribution and project logistics. Due to the fact that they serve as production sites as well as centres for cargo collection and distribution, they are extremely well integrated into regional economies and contribute substantially to economic growth and the creation of employment.

Three Hungarian Danube ports (Baja Public Port, Budapest Public Port, Győr-Gönyű Public Port) have been declared as National Public Port (OKK) by the government, which provides them state guarantee and priority for their developments. The National Public Ports are operated in a model which can be characterized as landlord or corporatized ports. The two types are closely related to each other. The largest port, the Budapest Freeport (National Public Port of Csepel) and the Port of Baja are more of corporatized ports, and the Port of Győr is more closely resembling a landlord port

In case of Freeport of Budapest, the ownership of the area, the water basins and all of the port infrastructure and superstructure is trusted on the corporation of FBL (Freeport of Budapest Logistics Inc.) by the landowner MAHART-Szabadkikötő Inc. The landowner does not take part of the management and operation of the port, however the FBL not only functions as a full port authority but it also provides basic port services by itself and by contractors.

Mahart Container Center (MCC) is one of the terminal operators of Freeport of Budapest. The terminal connects rail, road and river (barge) transport, able to handle any kind of unaccompanied intermodal means of transport, like containers (ISO containers, tank containers, 45’ pallet wide containers), semi-trailers and swap bodies.

10. Figure: Mahart Container Center

Source: Mahart Container Center

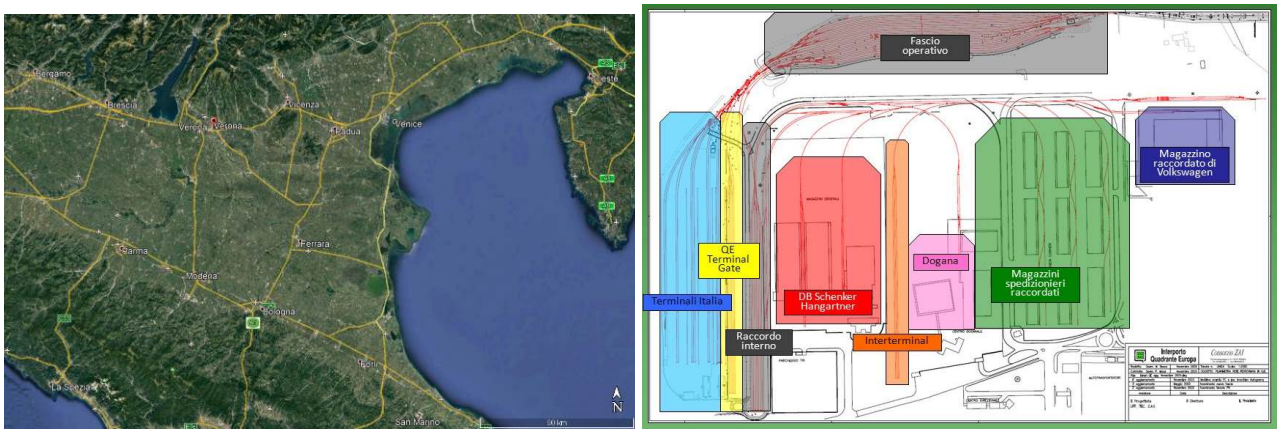
Main properties of MCC:

Terminal area [hectares]	11.1
No. of loading tracks	2
No. of berths	2
Length of quays [km]	2.25
Max. length of ships [m]	220
Max. draft of ships [m]	2.5
Internal rail network length [km]	0.87

2.1.3. Dry port of COMODALCE project for territorial needs assessment analysis

Quadrante Europa Freight Village is an inland intermodal terminal in Verona, representing the Dry port type of logistics hubs in COMODALCE project. It is part of a freight villages union called U.I.R. (Unione Interporti Riuniti) with nationally importance. It is also a member of EUROPLATFORMS with whom has Europe-wide visibility.

Quadrante Europa Freight Village has a strategic location since is placed at the intersection of the Brenner (north-south) and Serenissima (east-west) motorways and at the corresponding railways.



11. Figure: Quadrante Europa Freight Village - Verona

Source: Google Earth and Consorzio Zai

Consorzio Zai manages this infrastructure with a detailed plan approved by the Veneto Region. Consorzio ZAI is a public body that was established by the Municipality, the Province and the Chamber of Commerce of Verona thanks to a Decree Law 24/04/1948 n. 579 modified by Law 26/07/1975 n. 378.

The main tasks of Consorzio ZAI are urbanistic planning and promotion of global territorial and economic growth. This public body has supported the economic growth in the Verona area since 1948.

The main thematic areas can be listed relying on the freight village functions:

- the office center;
- the railroad system;
- the customs agency;
- the forwarding agent center;
- Volkswagen Group Italia;
- the vehicle services center;
- Quadrante Europa Park;
- Hangartner Terminal;
- Agricultural and Food Center

Main properties of Quadrante Europa Freight Village:

Port area [hectares]	270
No. of terminals	3
No. of terminal operators	4
No. of berths	N.A.
Length of quays [km]	N.A.
Max. length of ships [m]	N.A.
Max. draft of ships [m]	N.A.
Internal rail network length [km]	17

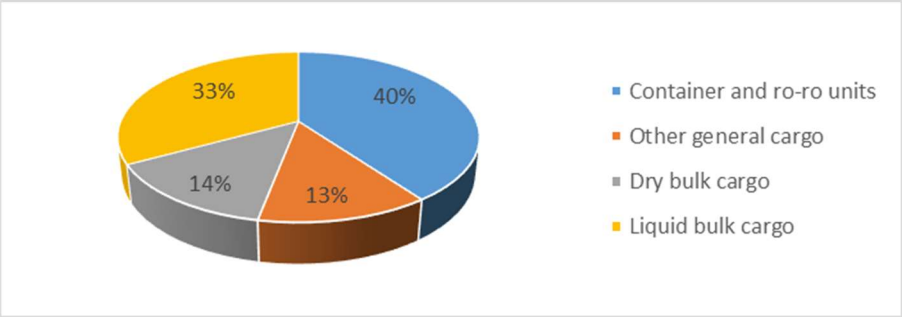
2.2. Supply and demand analysis

According to the TNA reports of COMODALCE project partner logistic centres the supply and demand characteristics are highly depending on the geographical and economic environment of a logistics centre. The following sub chapters introduce the main supply and demand features of the COMODALCE ports, but some identical characteristics can be observed, which are of great importance in multimodal freight transport and ICT development.

It can be stated that port traffic does not depend primarily on their region or state or county, because they are present in the supply chain at the global, European or Central European level. On the contrary, the port is one of the engines for its region or state or county.

Each port strives to improve its connection to the Ten-T network in hinterland transport, and the seaports have significant intercontinental and short sea shipping traffic too.

Seaports usually handle all types of goods, but the amount of container and ro-ro cargo is significant. Freight traffic in ports is growing every year, and even in a 4-year perspective, growth is usually in double digits. The increasing of container and ro-ro traffic is higher than the other cargo types. These facts encourage the continuous development of ports, especially at container and ro-ro terminals.



12. Figure: Cargo type split at seaports of COMODALCE in 2017

Source: Annual report of European Sea Ports Organisation

The inland waterway ports of the Danube (represented in COMODALCE by the Hungarian Danube ports) are also multimodal logistics hubs, but the IWT cargo handling is much lower than the capacities of the ports. So the IWT ports develop their intermodal (road-rail) cargo handling services.

The dry bulk cargo is the main cargo type at the Danube ports from the water side. Since the Danube ports primarily serve the regional economy, crops in agricultural regions, heavy bulk cargo (iron ore, coal, steel products) in industrial regions are the type of goods transported by IWT. The liquid bulk cargo is also significant in multimodal transport. Unfortunately container and ro-ro cargo transport is very low on the Danube, but the Danube ports can have significant traffic from these cargo types through their intermodal cargo handling services.

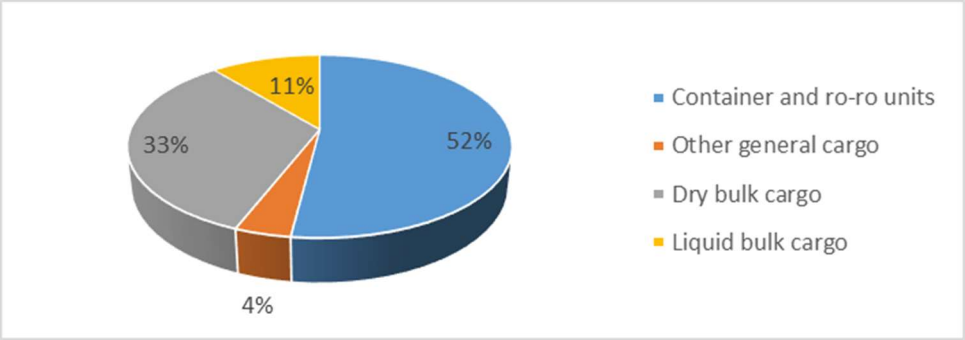
Annual traffic of Danube ports are also growing in the last years, but mainly in road and rail traffic. They are trying to increase the land area even by reducing water area (e.g. burying a basin), because in some cases further hinterland areas are not available and the waterway traffic does not need so much water area.

The hinterland cargo transport of the COMODALCE ports are mainly road transport. According to the TNA reports the average modal split is: road 62% and railway 32%. Except Port of Koper, which is a railway oriented port with above 60% railway modal split. This is due to the territorial and hinterland infrastructural features, but the high utilization (85%) of the railway will soon hinder the development of the port. The proportion of rail transport at Port of Trieste is also relatively high: approx. 50%.

Based on the TNA reports, it can be stated that each port wants to implement significant railway improvements in addition to road improvements. This is not only due to the significant support of current EU and national transport policies, but also the recognition of the potential of rail transport and the growing constraints on the further development of road transport.

2.2.1. Port of Gdynia

Gdynia Port is located only 25 kms away from another big universal Polish Port of Gdańsk being also TEN-T Corridor Infrastructure. Gdynia, Gdańsk and Sopot consists quite big agglomeration and together with satellite cities reaches almost 1 million habitants. So called Tricity is an strong industrial node in Poland with well developed shipyard, refinery, energy, steel and construction industry. Tricity is also one of the most important logistic node in Poland with wide warehouse and distribution offer.



13. Figure: Cargo type split at Port of Gdynia in 2017

Source: Annual report of European Sea Ports Organisation

Presently BCT is the second bigger Sea Container Terminal in Poland. Handling of the containerized cargo at the port is the domain of two modern container terminals: Baltic Container Terminal Ltd. and Gdynia Container Terminal S.A. Except containers BCT also is specialized in steel products and project cargo handling.

There are several container lines calling Gdynia Port with feeder and short sea vessels on regular basis.

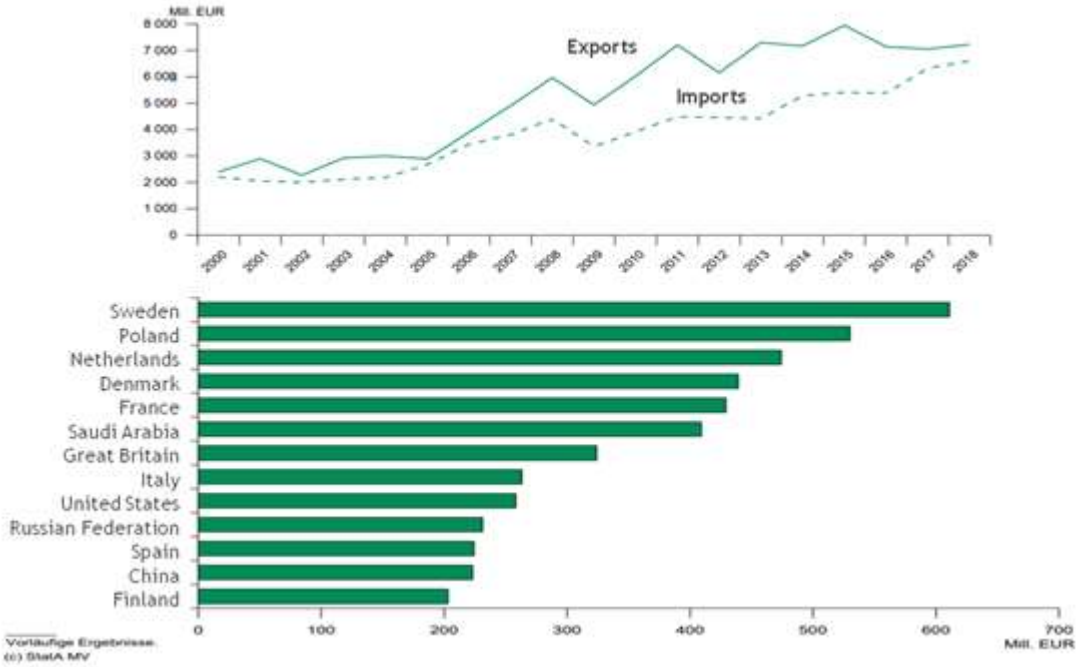
Gdynia Port is well connected by road and rail to the hinterland. Cargo traffic almost do not affect the City because of the convenient direct highway connection and because the port has got it's own rail infrastructure connected directly to Gdynia Port Station. Due to marginal inland-waterway transport in Poland, Gdynia Port hardly ever serves inland barges, however is prepared for handling this transport mode with quite nice potential of nearby estuary of the Vistula River. The modal split for inland traffic to/from the port is approx. 66% by road and 27% by rail and 7% by pipelines.

2.2.2. Port of Rostock

As the ports are the transport hubs of their hinterlands, Port of Rostock serves the cargo and passenger transport of Federal State: Mecklenburg-Vorpommern

The economic activities of Mecklenburg-Vorpommern are dominantly focussed on the European Union. The second and third most important trade partners are the Americas and Asia, but African ad Australia plays also significant role its export/import trade.

Mecklenburg-Vorpommern is part of two core-network transport corridors: Orient-East Med and Mediterranean-Scandinavian, which start or end in Rostock. The position of the city as well as the port as important hub for any transport flow between Central or South-East Europe and Northern Europe.

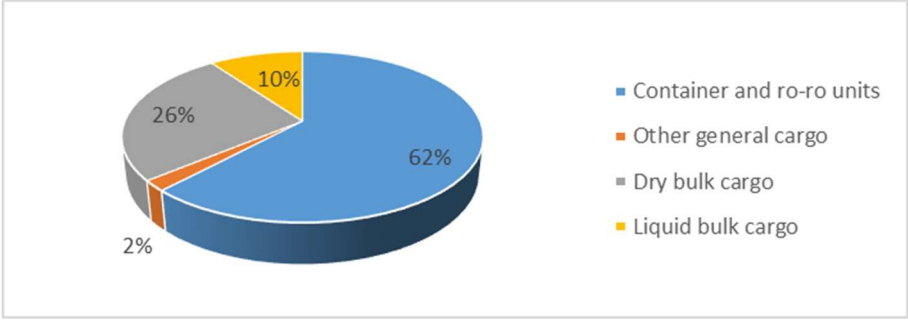


14. Figure: Export/Import statistics of Mecklenburg-Vorpommern

Source: StatA MV

Mecklenburg-Vorpommern as "agriculture" country the main export is focussed on such goods. But even the industries which needs seaports to export or import their goods and raw materials have a remarkable impact on the trade statistics. Main export goods are grain, metal, power generation and distribution devices. The main import goods are petroleum, paper, metal goods and machinery.

The most traffic in Port of Rostock is provided by ferry traffic, in addition to freight traffic. The port has ro-ro/ferry lines to Sweden, Finland and Lithuania.



15. Figure: Cargo type split at Port of Rostock in 2017

Source: Annual report of European Sea Ports Organisation

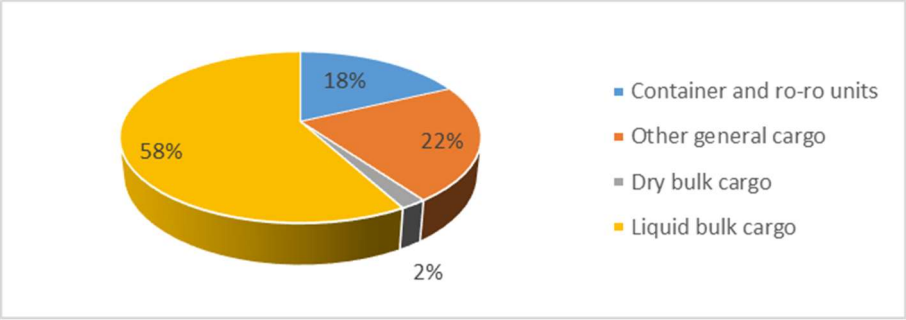
Mecklenburg-Vorpommern is a typical transit state with its high-capacity transport network. High-capacity motorways (A19 in a north-south direction; A20 in a east-west-direction) connects the state with other countries and important growing industrial regions. A relatively dense rail network (in relation to the number of cities and population) allow convenient travel across the state, although its share in freight transport is small (abt. 2%)

Port of Rostock is well connected by road and rail to the hinterland, because the main transport corridors start/end in Rostock. There is no inland-waterway transport in Port of Rostock.

2.2.3. Port of Trieste

The Port of Trieste is the main port of Italian autonomous region called Friuli-Venezia Giulia. Trieste is currently the first Italian port for volume of goods in transit and concentrates 97% of regional maritime traffic. However the region has good industrial performance, Port of Trieste serves only in minimal part the regional and national territory focusing rather on markets in Central and Eastern Europe. Germany has the biggest share in (rail) freight flows from Trieste, second is Italy with near the same amount, and the main destinations are Austria, Hungary, Czech Republic, Luxembourg and Slovakia. Only 28.5% of the trains are to/from Italy, while the remaining 71.5% are to/from foreign countries.

the Port of Trieste have realized that the most suitable mean of transport to reach those markets is by train



16. Figure: Cargo type split at Port of Trieste in 2017

Source: Port of Trieste

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.

As it can be seen in split of cargo types, beside container transport the liquid cargo and the general cargo handling is the main activity.

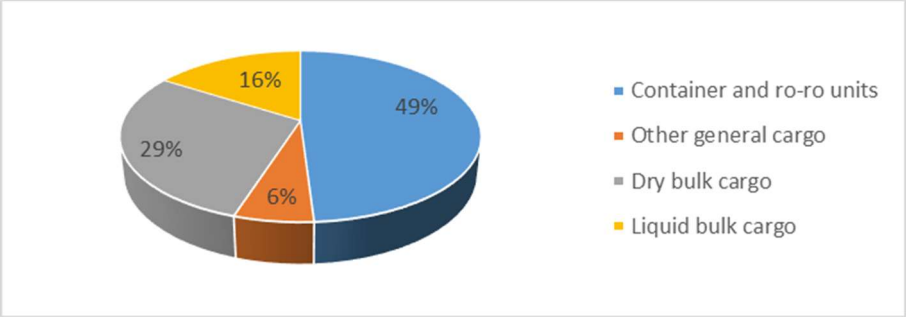
Friuli-Venezia Giulia is about 7845 km^2 from which abt.42% is mountainous. The Region hosts three ports and four intermodal terminals. Furthermore, it is crossed by two TEN-T core network corridors, the Mediterranean Corridor and the Baltic-Adriatic Corridor.

The regional road network consists of a motorway network and a network of main ordinary roads. The road density of the Region is 0.138 km/km^2. The regional railway network density is about 0.085 km/km^2, from which more than 70% is electrified. The road and railway network are denser on the coastal area, because the geography is mountainous and the densely populated areas are close to the seacoast.

Due to the huge increase in intermodal and container traffic (double digit increase in the last four years) Port of Trieste is the first Italian port in terms of number of trains. This positive trend, and the fact that Port of Trieste serves only in minimal part the regional and national territory focusing rather on markets in Central and Eastern Europe, significant investments in the port railway infrastructure are encouraged by the Italian Government, the Autonomous Region of Friuli-Venezia Giulia, the Port of Trieste and especially by the terminal operators.

2.2.4. Port of Koper

Port of Koper is the seaport of Slovenia. In addition to providing maritime trade of Slovenia, it is an important seaport for the landlocked countries in Central Europe. The port has terminals for all types of cargoes, but after the container and ro-ro (car) traffic the dry and liquid bulk cargo are the most significant cargo types.



17. Figure: Cargo type split at Port of Koper in 2017

Source: Annual report of European Sea Ports Organisation

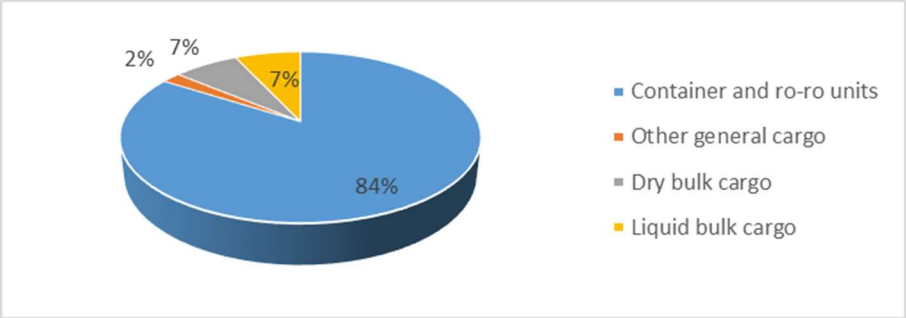
Since 2010 Port of Koper shows fast rate of growth and berthing facilities as well as other port capacities are getting congested. Moreover, based on the market situation there is a general confidence that the growth of the port's traffics shall continue in next years. However, by further increasing traffics it appeared quite clear that the physical capacities are becoming limited and therefore disposition of the activities in port can be optimized in order to improve their utilization and consequently increase port's long-term capacity. Especially in year 2010, after the recovery of traffics from the global recession crisis, the need to rethink the use of space and to shift cargo groups to unite similar activities became a priority. Such steps shall sustain optimization of handling operations and therefore contribute to an increase in productivity and efficiency of the port, also by implementing ICT and technical level of equipment, in order to speed up operational procedures and at the same time, to digitalize the information shared through the logistic chain. The fastest growing segment is container traffic, where the analysis are showing that, there is a potential of about 2 million TEUs for the Port of Koper by year 2030.

Due to the geographical position of the Port the hinterland connection is possible on railways or roads. Port of Koper is very railway oriented, because the railway transport modal split is abt. 60%. The efficient railway support is needed for the further development. According to railway traffics estimations, the existing railway connection with the implementation of all modernization and up-grades can support annual traffics for approximately 15,3 million tons. In year 2019 the total traffics on the railway line were approximately 12 million tons, which indicates an utilization rate of nearly 85%. The high utilization is because there is a relevant bottleneck to be considered on the railway connection to the hinterland, represented by a single railway connection on the section Koper – Divača. In case, this national strategic project of the "second railway track Koper – Divača" will be constructed on time, the port of Koper can continue its growth according to market potentials, otherwise also investments in the port's capacities after 2020 shall be adapted to the limitations of this railway link

2.2.5. Port of La Spezia

Thanks to its strategic geographic location, La Spezia is one of the most important ports in the Mediterranean Sea and it is the second largest Italian container port for direct access to the production and consumption markets in northern Italy.

Although Port of La Spezia handle all type of cargoes, the main is the container cargo. This kind of cargo gives 84% of the traffic.



18. Figure: Cargo type split at Port of La Spezia in 2017

Source: Annual report of European Sea Ports Organisation

The port is connected to the hinterland even by road and railway. Up to 30% of container traffic is handled by rail, aiming to reach 50% thanks to a new rail infrastructure (that allows train composition up to 750 meters long) in according to the Port Master Plan. The port is linked to the North Italian intermodal hubs by rail (like Melzo, Reggio Emilia, Verona and Padua). Thanks to this fact La Spezia serves the industrial domestic market and reaches central and Southern Europe destinations via the main rail freight corridors.

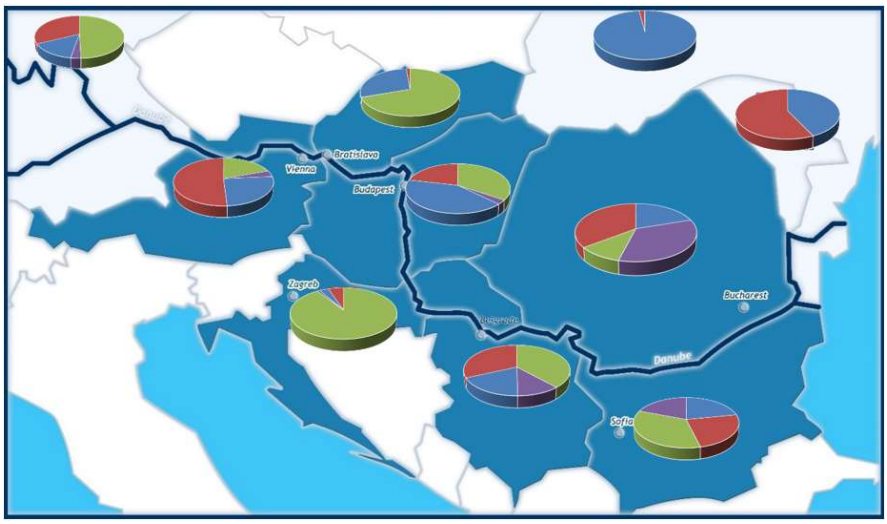
Regarding to the road connections The port of La Spezia is the maritime terminal of the important Tyrrhenian-Brenner Corridor, one of the leading north-south routes, connecting central Italy with the relevant industrial areas of North East. Passing through La Spezia by motorway, port trades can easily reach Parma, Milan, Bologna and, towards Verona, Central Europe.

The merchant port is linked to the motorway by a special tunnel built in order to give direct access to the port areas without involving urban roads.

2.2.6. Hungarian Danube ports

The Hungarian Danube transport cannot be analysed without the whole corridor transport overview.

In 2017 the largest transport volume in cross-border traffic between the Danube countries was achieved by Romania, amounting 19 million tons, followed by Serbia with 12.5 million tons and Austria with 9.5 million tons.



19. Figure: Danube cargo transport overview

Source: Common Danube Report 2017

Romania was the largest exporter on the Danube in 2017, followed by the Ukraine and Hungary .

The largest volume of imports on the Danube was also boasted by Romania, the second strongest import country was Austria, followed by Serbia.

	DE	AT	SK	HU	HR	RS	RO	BG	MD	UA
Transit	2.78	1.84	5.01	2.92	5.67	4.76	2.20	2.20	0.00	0.00
Domestic	0.18	0.39	0.01	0.24	0.06	1.44	7.32	1.09	0.00	0.01
Export	0.84	2.40	2.09	3.50	0.19	2.30	4.21	1.11	0.10	3.67
Import	1.81	4.82	0.10	1.81	0.33	3.96	5.40	1.73	0.32	0.15
Total	5.61	9.45	7.21	8.47	6.25	12.46	19.13	6.13	0.42	3.83

20. Figure: Danube cargo transport volume per country

Source: Common Danube Report 2017

Hungary, as a Middle Danube country, shall cooperate closely with the Danube countries. The transit traffic is quite high (34%) in the Hungarian inland navigation traffic due to the geographical location.

Unfortunately only about one-third of the Hungarian port capacity is used which is around the half of Western European figures. The proportion of inland navigation in transport is also very low on the Danube and in Hungary (cca. 1,5-3%) as well. This means there is capacity to be used for inland waterway transport.

Typical cargo flows for Hungary:

- Lower Danube export and import
- Upper Danube export and import
- Domestic transport
- Transit (both downstream and upstream)

In Hungary almost half of the cargo traffic is agricultural products, the ore and mining products have about 20% and the oil products are cca. 15% of the overall cargo traffic in the Hungarian Danube.

The container transport is very successful on the river Rhein but not yet on the Danube.

Only MAHART Container Centre is using the Danube river for container transport in Hungary.

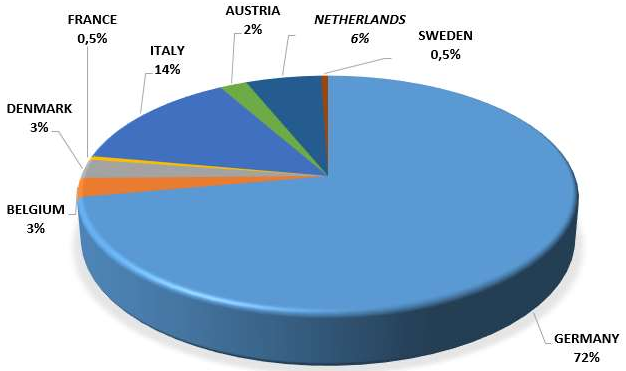
Majority of the cargo is bulk or liquid cargo, general cargo is the minority.

In the Hungarian Danube ports most of the unloading is from ship to quay but for loading almost half is road truck to ship. There is also ship to rail and rail to ship unloading and loading as well but ship to ship cargo transfer is very minor.

2.2.7. Quadrante Europa Freight Village

The main business of Quadrante Europa Freight Village (QEVR) is the intermodality (rail – road transport). The supply of freight village (QEVR) is focused on the railway connections to and from this node.

The majority of the railway destinations reached are located in the northern Europe. Due to strategic position of Verona, Germany absorbs the bigger share of the Verona market.



21. Figure: Quadrante Europa Freight Village railway traffic distribution

Source: Common Danube Report 2017

Although Germany is the main target of the trains from QEVR, management of the freight village is working to extend the coverage area of the rail cargo market of Verona. These new destinations will increase the supply, giving to the operators new opportunities of business.

An evaluation shows that the maximum number of trains that can be received by the Rail Road Terminal of Verona is about 20,000 trains per year. In 2017 16329 trains were managed, which were 81.6% of the capacity. Due to the high utilization of railway network QEVR decided to increase the performance and the overall efficiency of the terminal by developing railway capacity.

The placement of Verona in the ranking is at the third position after the important ports of Genoa and La Spezia

2.3. Policy and strategic background

Based to the TNA reports of COMODALCE project partner logistic centres it can be concluded that the logistics centres have strong policy and strategy background. In general the policies and strategies are in four categories:

- EU policies: General EU transport development policies, like EU White paper on Transport (2011) or TEN-T Guidelines and Regulation 1315/2013. EU macro-regional strategies for the Baltic Sea Region (EUSBRS), for the Danube Region (EUSDR), for the Adriatic and Ionian Region (EUSAIR), for the Alpine Region (EUSALP). According to the reports all partners pay special attention to the TEN-T network development strategy of the EU.
- National policies: All of the countries have long or medium term (10~20 years) national strategies for transport and for spatial development. Regarding to the transport modes, all countries have port, railway and road development plan, which are typically short or medium (3~10 years) term programmes.
- Regional policies: The logistics centres are paying attention to the strategies and programmes of its region (or state or county). These are serving the regional mobility, transport, infrastructure and industry development policy/plan of the region (or state or county). In these programmes the logistics centres are key elements, due to their employment, industrial and traffic potential. The regional policies are typically short (3~5 years) term programmes.
- Local strategies and plans: Each logistics centre has short or medium term (4~10 years) development strategy, and short term (4~5 years in advance) development plan. These are based on the EU / national / regional policies, and the local transportation and economics forecasts. The port development plans mainly concentrates on intervention in infrastructure (railway, crane , pier, quay, storehouse, etc.), and ITC system.

The EU and national policies, and in some cases the regional policies or strategies are enacting in the national (or regional) legislation. But in general the policy and strategic background of the logistic centres appear in development focused programs.

According to the TNA reports of COMODALCE project partner logistic centres, the main policies and strategies per COMODALCE partner are the following.

2.3.1. Port of Gdynia

EU policies	EU White Paper on transport, 2011 TEN-T Guidelines, Regulation 1315/2013 Baltic – Adriatic Corridor Work Plan
National policies	National Sustainable Transport Development Strategy up to 2030 National Polish Sea Port Development Programme up to 2030 National Railway Programme up to 2023
Regional policies	Regional Mobile Pomerania Strategy up to 2020 City of Gdynia SUMP up to 2023
Local strategies and plans	Port of Gdynia Development Strategy up to 2027

2.3.2. Port of Trieste

EU policies	EU White Paper on transport, 2011 TEN-T Guidelines, Regulation 1315/2013 EU Strategy for the Baltic Sea Region (EUSBSR) EU Strategy for the Danube Region (EUSDR) EU Strategy for the Adriatic and Ionian Region (EUSAIR) EU Strategy for the Alpine Region (EUSALP)
National policies	“Connettere l’Italia” (i.e. Connecting Italy) Policies for the relaunch of rail freight transport
Regional policies	“Piano regionale delle infrastrutture di trasporto, della mobilità delle merci e della logistica” (i.e. Regional Strategy for transport infrastructure, mobility of goods and logistics) Regional Law n. 15/2004.
Local strategies and plans	Port of Trieste Development Strategy

2.3.3. Port of Koper

EU policies	EU White Paper on transport, 2011 TEN-T Guidelines, Regulation 1315/2013 Baltic – Adriatic Corridor Work Plan
National policies	The Transport Development Strategy of the Republic of Slovenia The National Spatial Plan,
Regional policies	Regional Mobile Pomerania Strategy up to 2020 City of Gdynia SUMP up to 2023
Local strategies and plans	Port's Development Plan Port's Strategical Development Plan (2021-2025)

2.3.4. Port of La Spezia

EU policies	EU White Paper on transport, 2011 TEN-T Guidelines, Regulation 1315/2013 Mediterranean Corridor Work Plan
National policies	"Connettere l'Italia" (i.e. Connecting Italy)
Regional policies	
Local strategies and plans	Master Plan of the port of La Spezia: • Optimization of merchant traffic • Improvements of intermodal transport • Rationalization of the shipbuilding industries • Improvement of the tourist sector • Realization of a new cruise terminal • Rationalization and strengthening of fishing and aquaculture activities • Intervention in dock infrastructures • Intervention in railway and road infrastructures • Reclamation and dredging

2.3.5. Hungarian Danube ports

EU policies	EU White Paper on transport, 2011 TEN-T Guidelines, Regulation 1315/2013 EU Strategy for the Baltic Sea Region (EUSBSR)

	EU Strategy for the Danube Region (EUSDR) EU Strategy for the Adriatic and Ionian Region (EUSAIR) EU Strategy for the Alpine Region (EUSALP)
National policies	Act No. XLII of 2000 on waterborne transport Act No. CXC of 2012 affecting the ownership situation of the ports on the handover of certain properties to the Municipality of Budapest as well as on the amendments of certain acts concerning the municipalities Government Decree No. 120/1999. (VIII. 6.) on tasks concerning the maintenance of the waters and water facilities GKM Decree No. 49/2002. (XII. 28.) on the general operational regulations of port, ferry and ferry port and other shipping facilities as well as on application of the operational regulations GKM Decree No. 50/2002. (XII. 29.) on the creation, use, operation and termination of port, ferry and ferry port and other nautical facilities NFM Decree No. 57/2011. (XI. 22.) NFM on the rules of water transportation National Port Development Master Plan National Shipping Strategy National Transport Strategy
Regional policies	
Local strategies and plans	Development Strategies of the Hungarian Danube Ports Development strategy of the Hungarian Federation of Danube Ports

2.3.6. Quadrante Europa Freight Village

EU policies	EU White Paper on transport, 2011 TEN-T Guidelines, Regulation 1315/2013 EU Strategy for the Baltic Sea Region (EUSBSR) EU Strategy for the Danube Region (EUSDR) EU Strategy for the Adriatic and Ionian Region (EUSAIR) EU Strategy for the Alpine Region (EUSALP)
National policies	“Connettere l’Italia” (i.e. Connecting Italy) General Plan of Transport and Logistics Multi-year Planning Document

	New guidelines for the evaluation of public works
Regional policies	Regional Transport Masterplan of Veneto Region
Local strategies and plans	Quadrante Europa Freight Village Development Strategy

2.4. Introduction of ICT system

COMODALCE project partner logistic centres presented their ICT systems of multimodal transport in the TNA reports.

The information and communication technology of a logistics centre has to connect a wide variety of transportation field, it have to cover the whole multimodal transport chain. Due to many transport branches have to communicate with the port and with each other, a common ICT system is also impossible. That is why it can be concluded that every port or logistics centre has its own ICT system, although the systems always meet national or international requirements.

But all logistics centre seeks the unification of the ICT system and this is an important goal in the IT developments.

Other important goal of the IT and ICT developments is to turn the communication techniques from the old methods (e.g. paper based documents, phone call, telefax, etc.) to the modern technologies (e.g.: web based platforms, electronic communication, etc.). This require big efforts from ports, especially in

- secure data processing,
- following the evolution of IT
- compliance with the communication requirements and regulations of the various partners involved in the multimodal transport
- establishment of a uniform system.

The introduction of the ITC system of the COMODALCE partners are in the following chapters.

2.4.1. Port of Gdynia

There are many IT systems in the port of Gdynia today, covering particular needs of the users but they are not integrated. There is no Port Community System connecting and facilitating the data exchange among the players in logistics chain. All players are forced to work on several different systems rewriting the data and sending paper documents or files attached by electronic mail.

In 2017 Port Authorities of three biggest Polish Ports (Gdańsk, Gdynia and Szczecin-Świnoujście), set up the company ‘’Polski PCS’’ to develop PCS in these ports, complying with EU regulations and also market needs. PCS is still under construction. By the moment the systems functioning at Gdynia Port Node are:

a) Terminal operating systems (BCT – Main-Sail Tideworks, GCT own system)

b) Customs (own system with single window integrating all state inspections (like: veterinary, sanitary, and others…)

c) c) SZiPS system by Port of Gdynia Authority – statistics on vessels' calls and transhipments, integrated with VTS CBM, SeaSafeNet and PortBill: vessels booking via net, recording data on calls, wastes, shipping, unloading etc.;

d) Rail Notification Platform of Gdynia Port Authority for rail wagon notification

e) PHiCS (Polish Harbor Information and Control System) – border control and sea traffic Martitime Office in Gdynia

f) VTS CBM and SeaSafeNet in Gdańsk Gulf by Martitime Office in Gdynia, since 2003 for navigation purposes g) Metrological system GBAS-RTK, precise vessels' positioning in Gdynia Port.

g) h) Shipping Lines systems for cargo booking, manifests and vessel stowage & traffic (MSC, Hapag Lloyd, CMA, COSCO, Unifeeder, Containerships)

h) PKP PLK – (Polish National Rail Infrastructure Owner) – SEPE system for national rail traffic control.

i) Rail Carriers: PKP Cargo, LOTOS Kolej, PCC, DB Cargo for rail traffic monitoring and control

j) Intermodal Operators: PCC, Loconi, PKP Cargo Connect for cargo lists – internal for cargo lists and cargo documents

k) Freight Forwarders – internal operational systems (a few the biggest only)

2.4.2. Port of Rostock

IT plays an important role here. Not only with regard to the optimization of data exchange processes, but even on safety and security. To further improve the situation in maritime based logistic chains, the Port of Rostock has implemented a comprehensive terminal handling and control system. But this needs to be extended with interfaces to transport operators like logistic forwarders or train operating companies.

This extension shall be based on the existing infrastructure. The core activity is the development of interfaces to stakeholders to enable data exchange processes between them. These data are stored and used in the terminal system to allow tracking and tracing of transport units, intra-terminal handling processes, the documentation of risk transfer between the stakeholders and so on.

The terminal handling system is operated by the port company and connected to all stakeholder via interfaces. Even to other IT-components like scanning facilities, interface are needed and shall be developed to realize the overall aim of an IT-based port operation management.

2.4.3. Port of Trieste

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 in 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, Fernetti'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).

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.

2.4.4. Port of Koper

The proposed pilot actions followed through the COMODALCE project will contribute to obtain solutions improving operational activities, up to the limit of the existing railway lines. The ICT implementation of

port's system is constantly on-going, and, in the past, this process has benefited also from contributions of EU projects.

What is going to be developed through the COMODALCE project is both, the IT part of the process and the operational part of the transport, through the installation of an OCR system for the registration of containers entering/leaving the container terminal by train. In the specific, the port of Koper, in collaboration with Adria Kombi and the IT providers, will develop the digitalizing system recording the containers' traffic in the port and at the same time, will improve the data exchange between stakeholders working on the specific logistic chain.

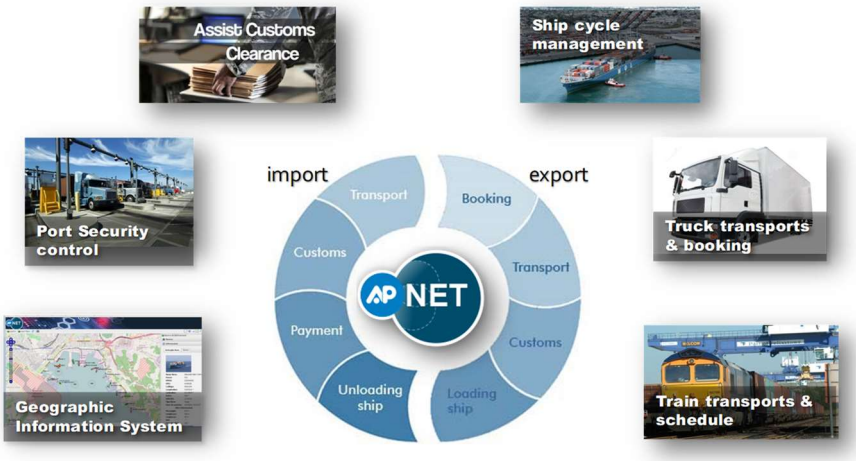
In addition to the IT solutions, the Port of Koper will install an OCT system on the internal railway in front of the container terminal, in order to read, check and record all the containers moved by train from/to the port. The railway operator will provide the list of expected containers and the system will check the matches. This functionality will reduce the field work and will allow the system to save the data about containers arriving/leaving the port, including possible damages and incorrect loading.

The existing communication between railway operators and other stakeholders involved in the transport process is in some cases very poor which in fact results sometimes in a simple communication via e-mail instead of a traceability system. These procedures can be modernized by introducing such solutions, that are going to be developed through the COMODALCE project.

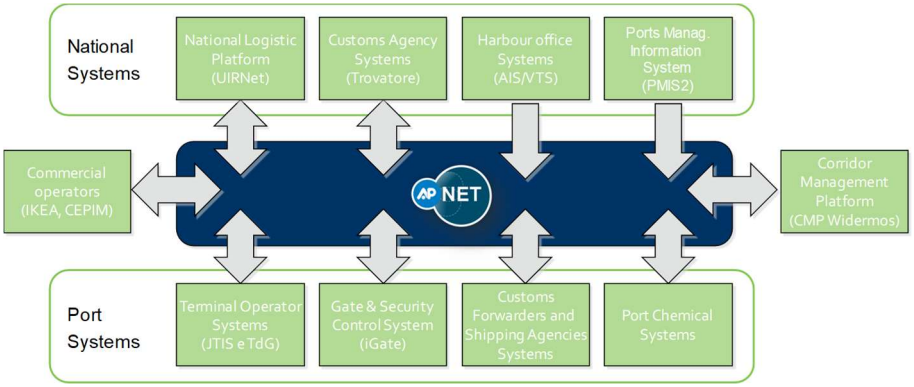
2.4.5. Port of La Spezia

In the Port of La Spezia, after sharing all institutional and private components involved in the logistics management chain, the APNet platform was developed for data exchange among all operators of the port community, including both Public Administrations both private operators.

The APNet platform acts as a common interface with the national platforms and speeds up data exchange and communications between the members of the port community, simplifying cargo-related operations with consequent reduction in time and costs. The figure below shows the overall scheme of the System, and the external system connections and the subsystem related to APNet.

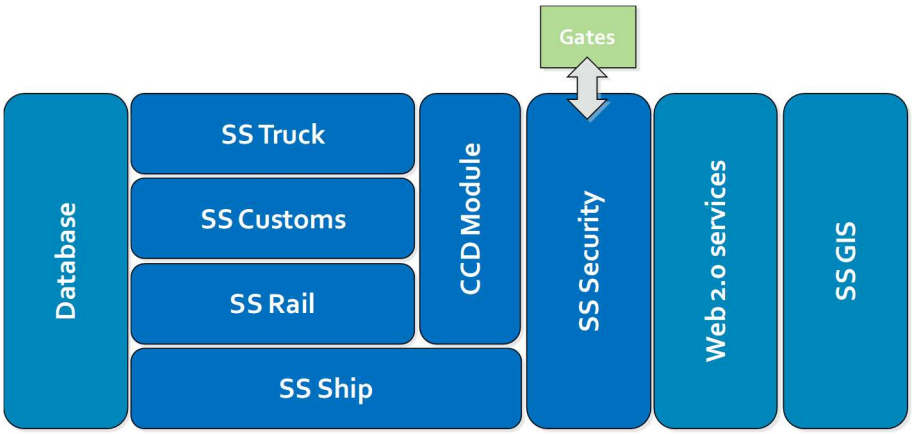


22. Figure: Overall picture of the System (Source: ADSPMLOr)



23. Figure: External system connection (Source: ADSPMLOr)

These are the actors involved: Shipping agents; Customs Agency; Port Authority; Truck drivers; Haulers; «Avvisatore Marittimo»; Harbour office; Port chemist; Financial police; Multimodal Terminal Operator; Gate/security operators; Commercial operators; «Sistema Porto» operators; Services (Pilotboats, tugboats, mooring, ship, etc.); Custom forwarders; Terminal operators; Fire fighters.



24. Figure: Subsytems (Source: ADSPMLOr)

Customs procedures possible with APNET consist in: Pre-clearing requests; Cargo Manifest (MMA e MMP) presentation; Delivery Order payment info; Customs declarations; Dangerous goods management procedures; Customs Agents / Financial police inspections.

Characteristics of Vessel cycle management are the following: Accost requests; Boatswain services handling; Pilot boats and tugboats services; In-port vessels state; Port services (maintenance, water and fuel provision, garbage collection, etc.); Interoperability with the Harbour Office system.

Truck and booking consist in: Notices and arrivals plan; Pick up and delivery mission handling; Controlled Corridors management; Financial police outgoing containers checklist; National Logistic Platform (UIRNet) interoperability.

Rail transport use of the System consists in: Convoy and goods details; Arrivals and departures scheduling; Controlled Corridors handling; Financial police outgoing containers checklist.

The port of La Spezia is also equipped with a CMP (Corridor Management Platform) developed within the WiderMoS EU project ended in 2015 (see also Chapter 6). The integration between the APNet platform and the Corridor Management Platform has made it possible to manage the information flow throughout the

entire supply chain between the port and inland terminal, involving all operators and interfacing with the Customs Agency systems.

These are CMP targets: a seamless shipment management and communication within the supply chain (Logistic Single Window); provide IT support services to ensure interoperability and implement standard procedures and mechanisms for data exchange; interconnect systems of different actors: carriers, logistics integrators, ports and other logistics platform; interconnect intermodal transport networks which include maritime, road and rail related information systems; boosting reducing costs of production / stock, as well as the logistics costs, offering multimodal optimized transport solutions; improve security transparency and reliability, offering standardized and qualified services.

Also Port security is guaranteed through "iGate" function. GIS (Geographic information system) is used for: overall port status checking; registered ships and trucks conditions; in-port routes tracking; web based access.

"Multi-Port" handling is guaranteed, with the use in both Port of La Spezia and Marina di Carrara, such as PLN Integration (see following paragraph).

In July 2018, the Port Authority of the Eastern Ligurian Sea signed an agreement with UIRNet (implementing body of Ministry of Transportation) and Logistica Digitale to join to Italian National Logistic Platform (PLN) project.

Within this agreement, Logistica Digitale is in charge for the management and evolution of the existing PCS (APNet) and the Port Authority contributes to the definition of the new National PCS platform and innovative PLN services.

2.4.6. Hungarian Danube ports

There are individual commercial ICT systems at the Hungarian ports mainly focusing on business management and monitoring of local cargo traffic at the terminal.

In 2017 the ministry responsible for transport had launched a new project in the frame of the Connecting Europe Facility programme co-financed by the European to establish a national integrated port management information system in Hungary.

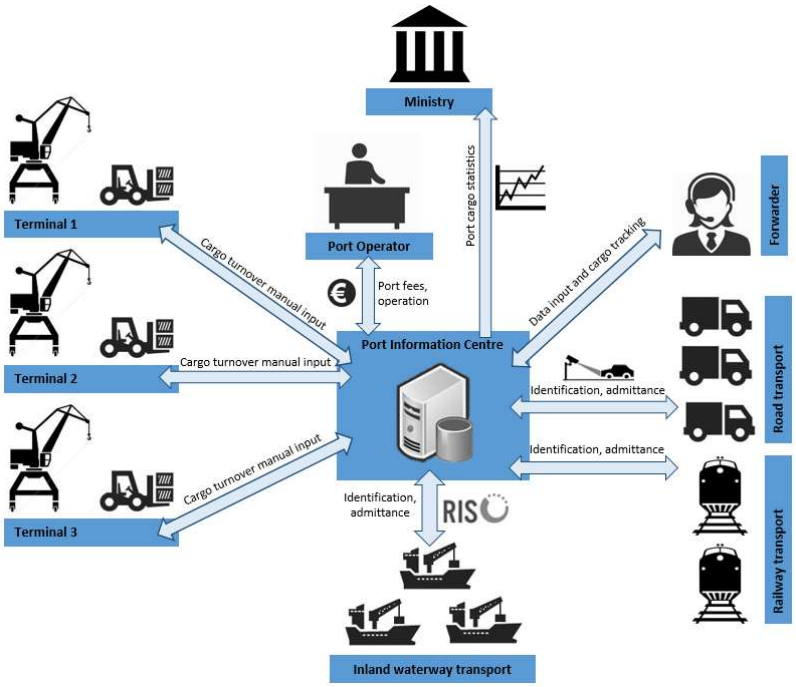
KIR

Project title:	Integrated Port Information System in Hungary
Project schedule:	01/09/2017 - 31/12/2020
Beneficiary:	Hungarian Ministry of Innovation and Technology (ITM)
Implementing body:	National Association of Radio Distress-Signalling and Infocommunications (RSOE)
Short description:	The overall objective of the project is to develop an integrated inland port ICT application to streamline administrative formalities through

	better use of information, communication and positioning technologies. To deliver the overall objective the Action will develop, test and validate an integrated inland port information system. In addition the Action will analyse cross border options and opportunities for interconnection. The pilot integrated port information system will be: • monitoring of the incoming/outgoing transport flows into/from the port; • recording the volume of cargo loading and unloading; • port traffic management; • modernization of the registration system of port terminals; • modernization of the port management supervision, and automatisation of port charges and electronic invoicing; • providing electronic data to ministries, national statistics office and EUROSTAT; • an enhanced security system and • monitoring the implementation of port rules and licenses. The pilot system will have the following functionalities: • Port and Cargo Operations Management; • Port Traffic and Berth Management; • Port Services and Dues Management and • Electronic Reporting and Statistics.

Activity 1 Project management and publicity measures	Activity 2 Design of the pilot system	Activity 3 Pilot system implementation and testing	Activity 4 Exploitation of results
SuAc.1.1 Project and financial management	SuAc.2.1 Analysis of maritime and inland port information services	SuAc.3.1 Installation of hardware components	SuAc.4.1 Introduction of statistic services to national ports
SuAc.1.2 Project dissemination and synergy with other relevant projects and organizations	SuAc.2.2 Analysis of statistic data provision service	SuAc.3.2 Software development and system integration	SuAc.4.2 Exploiting possibilities for cross border cooperation based on project results
SuAc.1.3 Preparation and execution of public procurement procedure	SuAc.2.3 Analysis of user needs	SuAc.3.3 Pilot tests, evaluation and validation	
	SuAc.2.4 Pilot system specification		

25. Figure: Work Breakdown Structure of the KIR project (Source: RSOE)



26. Figure: Planned functional structure of the pilot system (Source: RSOE)

Most important outputs of the project will be the new statistics and port log services for the ports and for the authorities. There is also a demand for other terminal level services such as the Quay occupancy planning or the Port fee calculator.

2.4.7. Quadrante Europa Freight Village

All the ICT services provided by the IT center of the Verona inland terminal that will be necessary to understand how the actions developed through COMODALCE can solve the problems detected.

Quadrante Servizi was established in October of 1988 thanks to the idea of Consorzio Zai and some forwarders that settled in the area at the beginning of the freight village activity. It was created with the aim to manage all the inland terminal infrastructures and also to provide the main services (like optical fiber, maintenance, IT assistance, etc.) to private undertakings and public entities. Over the years, it reached high level of performance, becoming the soul of the node of Verona. Now, it has its own autonomy and identity.

In the last 15 years, more than 100 companies have joined to the telematics network of the freight village, using the services provided by Quadrante Servizi.

Nowadays, the main services provided by the company in the freight village area are listed below:

- DATACENTER OF QUADRANTE SERVIZI: These datacenters host the servers, the switches, the firewalls and all the devices. These are the elements of the freight village network. Inside the server rooms are managed both the housing services for the single server and the entire rack cabinets that are connected through the optical fiber to the network.
- CENTRALIZED BACKUP MANAGEMENT: Quadrante Servizi has a safe room to keep the shared storage servers. Therefore, it can offer customized remote backup services.
- EMAILS SERVICE: Quadrante Servizi provides the following services: configuration, outsourcing management e-mail server, web server, proxy server, ftp server, fax server, application server, CMS, groupware and project management, w-lan management, software-hardware sales, web communication, web promotion and customized software.
- COMPUTER SECURITY: Quadrante Servizi handles the safe network for all the customers operating in the area. In addition, it manages an internal network for all the players that need a higher level of service.
- CUSTOMIZED SOFTWARE: Quadrante Servizi designs software with specific features to satisfy the request of some logistics operators.
- ASSISTANCE: Another service provided by Quadrante Servizi is the Information technology assistance as mentioned before.
- MANAGEMENT OF A VIDEO SURVEILLANCE SYSTEM: Quadrante Servizi uses some cameras placed in the key points of the freight village area for security purposes.
- VIRTUAL SERVERS AND CLOUD COMPUTING: Quadrante Servizi provides a cloud computing service in order to keep in a dedicated server the information of the operators using this storage system. It guarantees an excellent level of protection against the cyber-attacks.
- MANAGEMENT OF TECHNOLOGICAL SYSTEMS FOR RAILWAY INFRASTRUCTURES: Quadrante Servizi is the terminal manager of Interterminal. Therefore, it is able to develop technological systems necessary to manage railway infrastructures like terminal gates of buffer areas.

3. Stakeholder mapping and management

COMODALCE project partner logistic centres made an analysis in their TNA reports about the stakeholders who are important for multimodal transport and related information and communication technologies (ICT). They have identified the key stakeholders and elaborated measures how to manage them.

The stakeholders presented in the TNA reports are very diverse according to their role in the multimodal supply chain and its information and communication technology. The categories defined by the partners cover all of the logistics chain:

- Terminal operators of multimodal and intermodal terminals
- Railway operators (infrastructure and carriers)
- Authorities, customs agencies, regional and international administration bodies
- Intermodal operators
- IT providers
- Freight forwarders
- Shipping lines
- Politics
- Media, press, publicity
- Owners (property, data, right, etc.)
- Logistics service providers
- Customers
- Other ports

The stakeholder management is sensitive and important task in the operation of logistics centres, especially in ICT. In order to plan the engagement level of the stakeholders, their influence and interest were assessed in the TNA reports, regarding to the multimodal transport and its ICT.

Not all stakeholders have the same relevance. For that reason, the stakeholder management must make a careful classification for the effective cooperation.

The methodology used in the TNA reports grouped stakeholders into four types based on their interest and influence on multimodal transport and ITC:

- Marginal stakeholder (low interest / low influence): They indirectly live the multimodal transport and its ICT, without being able to influence it incisively. Based on the TNA reports, the marginal stakeholders are the shipping companies, freight forwarders, research institutes and associations. The stakeholder management strategy is to monitor them.
- Institutional stakeholder (low interest / high power): They indirectly participate to the multimodal transport and its ICT, which carry out a corporate control and a support function. Based on the TNA reports, the institutional stakeholders are some freight forwarder, railway operators, terminal operators and customs agencies. The stakeholder management strategy is to keep satisfy them.
- Operational stakeholder (high interest / low power): They are the entities involved in a significant way, participating in the multimodal transport and its ICT in terms of organizational activities, released outputs, which have little influence on project decisions. Based on the TNA reports, the operational stakeholders are the politics, publicity, rail-road terminals and some public organisation. The stakeholder management strategy is to keep inform them.
- Key stakeholder (high interest / high power): They are the subjects with a strategic role in the multimodal transport and its ICT, since they are directly involved, having a strong influence in the essential decisions on the multimodal transport and its ICT. Based on the TNA reports, the key

stakeholders are the key operators in the port, companies in the port, customs agency and transport administration offices. The stakeholder management strategy is to manage closely with them.

Due to the interest and influence of the stakeholders are very different by the COMODALCE project partners, their excerpted analysis are in the following chapters.

3.1.1. Port of Gdynia

List of stakeholders:

Intermodal operators:
- Loconi Intermodal
- PCC Intermodal
- Primer
- Spedcont
- Erontrans
- POL-Agent

Railway Local Carriers:
- PKP Cargo
- CTL
- DB Cargo

Infrastructure owners:
- National - PKP PLK
- Local - Gdynia Port Authority

Inland Terminals:
- PCC Intermodal Kutno
- Metrans Gądki
- Loconi Warszawa
- Loconi Radomsko
- PKP Cargo Connect Franowo
- Spedcont Łódż Olechów
- Erontrtans Stryków
- PCC Intermodal Gliwice

Freight Forwarders (group of 350 companies)

Shipping lines:
- MSC
- Containerships
- Unifeeder
- Yang Ming
- Eimskip

The stakeholder management matrix:

3.1.2. Port of Rostock

List of stakeholders: N.A.

The stakeholder management matrix:

+	**„Keep satisfied“**	**Key players**
	1. Freight Forwarders (especially DB Schenker, DHL, DSV, LKW Walter) 2. Railway operators 3. Terminal operators 4. Customs Agency 5. Smaller ports	1. Ports (Rostock Port, Wismar, Mukran etc.) 2. Administration on regional level 3. Federal administration of M-V 4. Key operators in the ports 5. Important companies
Level of influence and power	**Monitoring**	**„Keep informed“**
	1. Research institutes 2. Universities 3. Companies in general	1. Politics (ministries on national level) 2. Chambers of commerce 3. Publicity 4. EU
-		

\- *Level of commitment* +

3.1.3. Port of Trieste

List of stakeholders:

Companies:

- RFI S.p.A
- Rail-road terminals

Operators:

- Railway undertakings
- Terminal operators
- Freight forwarders

Customs agency

The stakeholder management matrix:

Keep satisfied	Manage Closely
- Freight Forwarders - Railway Undertakings - Terminal Operators-	- RFI S.p.A. - Customs Agency -
Monitor	**Keep informed**
- -	- RRTs-

3.1.4. Port of Koper

List of stakeholders:

- Port Koper, Container Terminal
- Rail Traction Provider SŽ TP
- Shunting Coordination by NŽT
- Intermodal Operators
- IT Providers

The stakeholder management matrix:

Keep satisfied	Manage Closely
- Terminal Operators - Railway operators-	- IT providers --
Monitor	**Keep informed**
- Shunting coordination-	- Rail Traction providers

3.1.5. Port of La Spezia

List of stakeholders:

Terminal operators:

- La Spezia Container Terminal (LSCT)
- Terminal del Golfo spa (TDG)

Rail related companies:

- Rete Ferroviaria Italiana (RFI)
- La Spezia Shunting Railways (LSSR)
- Oceanogate Italia

Transport operators:

- La Spezia Port Service S.r.l.
- Hannibal spa
- Mercitalia Intermodal spa

Sipping companies and agencies

- MSC Mediterranean Shipping Company
- Tarros Spa

Institutions

- Liguria Region
- Agenzia delle Dogane e dei Monopoli (Customs Agency)

The stakeholder management matrix:

Keep satisfied	**Manage Closely**
- CUSTOMS AGENCY - LSPS	- HANNIBAL - LSCT - LSSR - MERCITALIA INTERMODAL - RFI
Monitor	**Keep informed**
- MSC - OCEANOGATE - TARROS GROUP	- LIGURIA REGION - TDG

3.1.6. Hungarian Danube ports

List of stakeholders:

Authorities:

- Ministry of Innovation and Technology (ITM)
- Budapest Capital City Government Office (BFKH)
- National Statistics Office (KSH)
- National Tax and Customs Authority (NAV)
- Danube Water Police Captaincy (DVRK)
- General Directorate of Water Management (OVF)

Ports:

- - Hungarian Federation of Danube Ports (MDKSZ) - including 25 Danube ports
- - Freeport of Budapest
- - Port of Baja
- - Port of Győr

Logistics service providers:

- - Association of Hungarian Logistics Service Centers (MLSZKSZ)
- - Hungarian Logistics Association (MLE)
- - Hungarian Federation of Shipping (MAHOSZ)
- - Hungarian Federation of Inland Shipping Companies (MBFSZ)

The stakeholder management matrix:

Keep satisfied	**Manage Closely**
- MLSZKSZ	- ITM - BFKH

	- MDKSZ - Freeport of Budapest - Port of Baja - Port of Győr
Monitor	**Keep informed**
- NAV - DVRK - OVF - MLE - MAHOSZ - MBFSZ	- KSH

3.1.7. Quadrante Europa Freight Village

The stakeholder management matrix:

Keep satisfied	**Manage Closely**
- RTC (railway company) - ISC (railway company) - MIR (railway company) - TX Logistik (railway company)	- QUADRANTE SERVIZI - TERMINALI ITALIA - CONSORZIO ZAI -
Monitor	**Keep informed**
- VOLKSWAGEN group - DB SCHENKER - HANGARTNER -	- Verona ONE (dispatcher) - DSV (dispatcher) - ARCESE (dispatcher) - PANEUROPA (dispatcher)

4. SWOT analysis

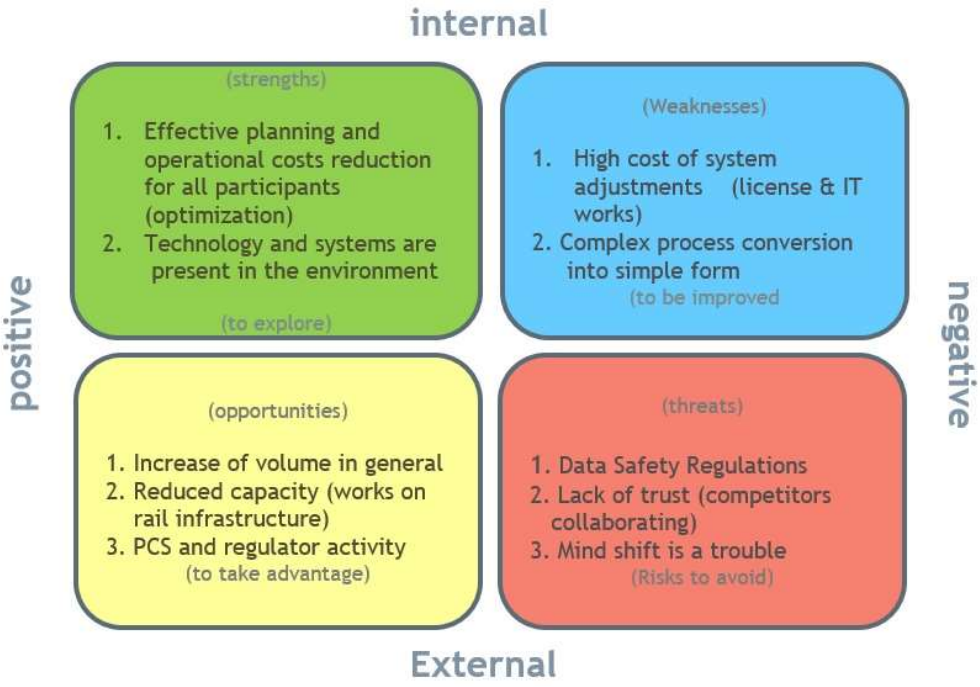
COMODALCE project partner logistic centres made an analysis in their TNA reports to identify key internal and external factors perceived as important to achieving project objectives as they stem from previous project activities. The analysis were made by the SWOT analysis technique. All relevant elements are divided into two main categories:

- Internal factors — Strengths and Weaknesses
- External factors —Opportunities and Threats

The results are tailor made, meaning that the internal and external factors are very different in every port due to their territorial (geographical, economical, etc.) circumstances.

The excerpted analysis results are the SWOT tables, which are in the following chapters.

4.1. Port of Gdynia



4.1.1. Port of Rostock

Strengths	Weaknesses
1. M-V holds a long coastal area with several sea ports (gateways to the Baltic Sea) 2. Rostock Port is one of the most competitive German Baltic Sea Port 3. Established links (A19, A20, A14 [M-V to BR], A24, E55, E251), fast connection to Scandinavia and Adria 4. Frequent trading 5. Intermodal Hubs	1. Some hinterland infrastructure issues (conditions of established infrastructure) 2. Tight approach fairways (e. g. Wismar) 3. Fairway depth 4. Last mile connections
Threats	**Opportunities**
1. Sediment displacement 2. Enlarging container terminals/feeder in BSR 3. Intensification of direct Baltic Sea approaches by large container ship 4. Technical issues (Cyber security with ongoing digital practise) 5. Less throughputs caused by disease outbreaks or government interventions (currently: Corona virus)	1. Higher throughputs with enhanced hinterland infrastructure 2. Connecting existing infrastructure 3. Extension/intensification of current trade routes 4. OEM corridor 5. Access to European funds for the strengthening of port and inland port infrastructure 6. Increase in handling efficiency

4.1.2. Port of Trieste

Strengths	Weaknesses
- 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. - Advanced modular Port Community System (Sinfomar) already connected with interoperability with several external systems.	- 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	**Threats**
- 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.	- 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.

- Availability of European and national funds for the strengthening of port and inland port infrastructure. - Increased safety in navigation. - Increase of port efficiency. - Extension of Sinfomar PCS with integration and full data exchange with hinterland dry-ports and the port of Monfalcone, in order to evolve it to an Hinterland Community System - Extend communication capabilities of Sinfomar with systems used by RUs and railway stakeholders. - Extend land side monitoring of incoming trucks with OCR systems.	- Cyber security threats. - Safety of navigation issues.

4.1.3. Port of Koper

	INTERNAL	
POSITIVE	- high rate of digitalization - time savings - accuracy - Automation of processes linked to the detection of containers from/to the port	- need for trainings - compulsory use for all
	- time saves on train processing - data accuracy improved - immediaty status overview - database for analytics - data digitalization	- obsolete infrastructure - system collaps may cause the halt of operations - weather could influence the data capture
	EXTERNAL	NEGATIVE

4.1.4. Port of La Spezia

Strengths	Weaknesses

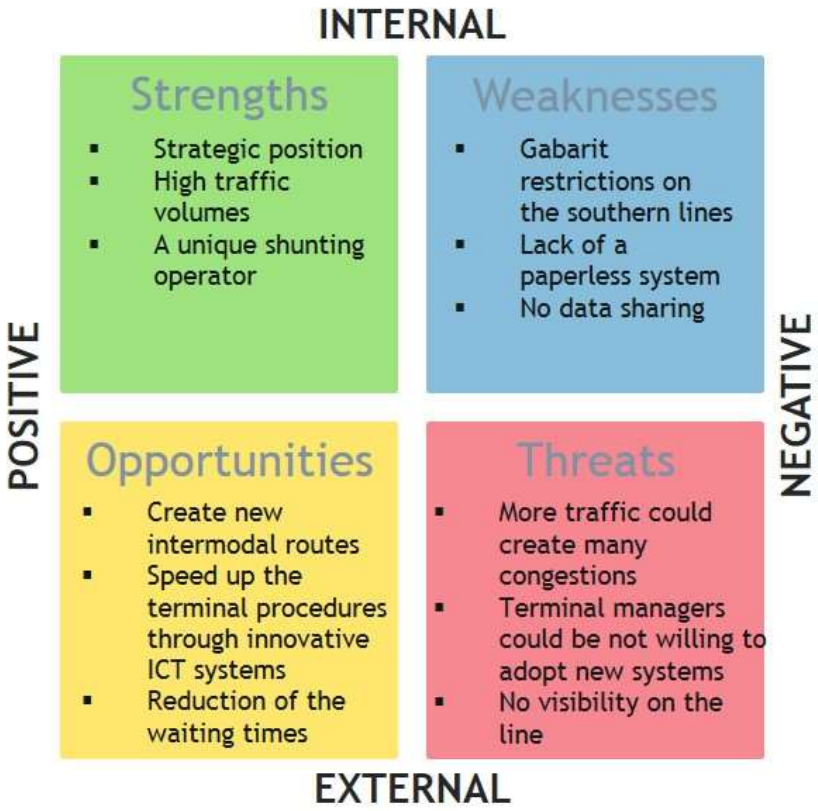
- Longtime skilled know how in developing ICT platforms in support of the intermodal transport - Several currently operative "best practices" (see chapter 5) in this field - First Italian port for rail market share - Second Italian gateway port - Third Italian port for TEUs handled - Reliable and competitive container port in the Med - The Italian port with the greatest intermodal transport use since the nineties - Very close to the main North Italian markets, which are over 45% of Italian GDP - Up to 200 weekly trains, 128.853 waggons and 354.000 TEUs transported via rail in 2018	- The process of integration, by the Public Administration, of the ports of Ligurian Sea is relatively still young and recent - Direct rail connection with Po Valley (Rail line La Spezia – Parma "Pontremolese") is not included in the TEN-T Network
Opportunities	**Threats**
- Public and private stakeholders very responsive for development of ICT platforms in support of intermodal transport - The Port of La Spezia as a southern gateway for Central Europe markets through the North-South TEN-T Corridors - International relationships through the intermodal terminals of Melzo, Milan and Verona - Fast corridor procedures in operations speeding up custom procedures	- Strong competition at national and international level in the field of maritime and intermodal transport

4.1.5. Hungarian Danube ports

Strengths	Weaknesses
- Excellent cooperation between Danube ports in the frame of the Hungarian Federation of Danube Ports (HFIP) - Geographic location of the country and the ports - Majority of the ports are multimodal - Free capacities available - Development projects are running and planned - National Port Development Plan (2019)	- weak PR and marketing activities of ports - low level usage of free capacities and infrastructure - obsolete infrastructure and low level use of IT at some ports - obsolete law and regulation system and legal procedures - low awareness of multimodal transport in Hungary - human resources shortage problems

- Integrate Port Management Information System will be established in Hungary (KIR project)	
Opportunities	**Threats**
- Strengthen cooperation between Danube ports, open to other Danube ports in neighbouring countries - Increase multimodal transport - Use of free capacities and new developments - Implementation of National Port Development Plan - Increase competitiveness by using new IT system from KIR project	- image of ports is a decreasing the traffic volume also - IWT and multimodal port market share continue to decrease - regulation system serves as an oblstacle for ports - multimodal transport is avioded in Hungary - lack of human resources in ports

4.1.6. Quadrante Europa Freight Village



5. Needs identification

COMODALCE project partner logistic centres collected their (or the involved stakeholders) needs in their TNA reports about possible developments for the multimodal transport and its ICT.

The lists of needs are very different, due to the differences of circumstances, but the need for developing ITC systems and the railway services can be concluded commonly.

The different needs of the COMODALCE partners are listed the following chapters.

5.1. Port of Gdynia

Short title of need	Description, justification	Identified by (organization)
better shunting operations management at Port Station	correct & early information results in better planning. Cost optimization (less locomotives, less people)	CTL (Local Railway Carrier)
	fast wagons rotation unblock station capacity	PKP PLK (National Rail Infrastructure Owner)
	smooth and punctual arrival to Port Station, no stoppages on the way & delays.	PKP Cargo (Railway Carrier)
Reliable information about wagons arrival to terminal and cargo transshipment status	Better operation planning. Optimal allocation of equipment and workforce. Lower operational costs. Elimination of idle time and congestions.	BCT Gdynia (terminal)
	reliable information about train late arrivals. Better cargo management when closing loading list for the vessel.	Containerships (shipping Line)
better use of wagons available at the terminal (more shuttle trains)	Optimization of wagons' fleet, less costs, more sales.	PCC Intermodal (Intermodal Operator)
	Optimization of operational work (more wagons served in shorter time). Elimination of stoppages during operations necessary for shunting wagons, saving costs.	BCT Gdynia (terminal)

	reduction of wagons' traffic on busy lines, creation of more infrastructure capacity with no investments	PKP PLK (National Rail Infrastructure Owner)
container readiness status consultation available on	better cargo management. Internal cost reduction and better customer satisfaction.	PCC Intermodal (Intermodal Operator)
	better coordination with Railway Carrier when ordering wagons for carriage. Cost reduction and shorter time of delivery to final customer.	POL-Agent (Intermodal Operator & Freight Forwarder)
communication via integration module (system to system)	less manual work, cost saving.	PCC Intermodal (Intermodal Operator)
	sooner and reliable information necessary for operational planning	BCT Gdynia (terminal)
	All users need to have guarantee of sensitive data safety.	Erontrans (intermodal Operator)
	less manual work, better operational planning and cost saving	PCC Kutno Terminal (inland Terminal)
Easy, modern and user friendly tool to communicate and use, available also on mobile devices	Necessary for the ones who has no operational system	NTQ Intermodal (intermodal Operator)
	Mobile application is necessary as often requires action afterhours	Primer (Intermodal Operator & Freight Forwarder)
	Increase of competitiveness of the terminal, better rail cargo attraction.	BCT Gdynia (terminal)
Reliable information from terminal about transshipment container status	Better cargo management, sales and customer service to the final receiver (catching vessels and trains on time)	Loconi Intermodal (Intermodal Operator)
Reliable information when wagons enter and leave terminal	Closer management of the rail traffic within the port.	Gdynia Port Authority (local infrastructure owner)
Flexible integration module	reduction of IT costs	Primer (freight forwarder)

5.2. Port of Rostock

Short title of need	Description, justification	Identified by (organisation)
Rail based scanning facility	Infrastructure to monitor intermodal trains entering the port terminal	Port operator / Rail transport company / Terminal operator
Data exchange about intermodal units	Exchange of transport related, unit specific data, with regard to its current location, condition and more	Forwarding and logistics company / Port handling companies / Terminal operating company

5.3. Port of Trieste

Short title of need	Description, justification	Identified by (organisation)
Last mile Railway	Upgrading of the last mile railway connection.	PNAEAS/Stakeholders
Aquilinia rail station	Infrastructural upgrading in order to reactivate the railway track linking Aquilinia station to Campo Marzio.	PNAEAS/Stakeholders
Scalo legnami rail station	Upgrading of the existing railway infrastructure and of the new station Scalo Legnami.	PNAEAS/Stakeholders
Piers railway marshalling yard	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.	PNAEAS/Stakeholders
Rail data – IN	Development of data received in PCS from RUs and railway stakeholders.	PNAEAS/Stakeholders
Monfalcone PCS	Extension of current PCS to cover all activities of the Port of Monfalcone, recently added to the competence of PNAEAS.	PNAEAS/Stakeholders
Dry Ports data exchange	Extend the data exchange currently running between PCS and the Fernetti dry port systems to cover all the other dry ports in region.	PNAEAS/Stakeholders
Foreign platforms data exchange	Data exchange with other foreign platform abroad of dry ports connected	PNAEAS/Stakeholders

	with railway lines with Trieste, e.g.: Furnitz, Mahart, etc.	
Land side monitoring	Monitoring of trucks expected in port by OCR cameras along highways.	PNAEAS/Stakeholders
Slot management app	Development of integration with TOS platforms and development of an app to inform truck driver of possible time slots for load/unload at the terminal, with the possibility to book a slot by the app.	PNAEAS/Stakeholders

5.4. Port of Koper

Short title of need	Description, justification	Identified by (organisation)
Upgrade of the system at the container terminal	The container terminal uses the Tideworks system for its planning and operations to be made at the container terminal.	Port of Koper container terminal
Installation of the OCR scanning system for the container terminal	The block trains entering/leaving the port and its container terminal are always checked by internal staff. Such a solution may redirect the staff on other operative areas and leave the system scanning and doing the work by itself, just with a check from the desktop.	Port of Koper container terminal
Digitalization of data exchanged about the freight in containers transported by train	The automatic system will allow all the logistic operators involved in the chain, to obtain the requested data instantly and it will be stored on a hard drive also for later checks and consultations/verifications.	Shunting Coordination NŽT, Intermodal Operators and Rail Traction Provider SŽ TP, Forwarders
Speeding up of administrative procedures	Actually, customs and other internal administrative procedures need a reduction of time spent for it, in order to better plan the trips and to maintain the competitiveness of the service.	Forwarders, Railway operators, Port of Koper Container Terminal
Speeding up of operative processes on the field	The operations on the field can be reduced with the new proposed solutions by digitalizing the acquisition of images from the field. It would reduce not only the time spent on it, but also will improve the needs for safety and security in the area scanned by the new equipment. If there is now an employee who checks the wagons and containers, and his report is the only available document, which is really subjective, the scanning and digitalizing of	Port of Koper container terminal, forwarders, Shunting coordination, rail traction providers, IT providers

	processes would mean also a constant monitoring of the area also keeping the data for a longer period completely available to all the parts involved in the logistic process, especially when the data is fundamental to demonstrate times of arrival, times of departure, damages and status of the freight.	
Database with data, pictures and videos of the transported containers	The actual processes allow just the detection of the status of the wagons/containers during the specific physical check of the staff on the field. The database will offer an ex-post check, when needed and in case of specific requests from the involved entities. The support will include also the collaboration of the staff of the IT provider, which has a database for possible errors of the system.	Luka Koper container terminal, IT providers, rail traction provider, forwarders, customs, owners, shipping agencies and other transporters

5.5. Port of La Spezia

Short title of need	Description, justification	Identified by (organisation)
UPDATING OF EXISTING ICT PLATFORMS (PCS, other Corridor Platforms)	Need to update functions of PCS APNet and other ICT platforms that have to dialogue with the C.I.P. foreseen by Pilot Action, in order to their harmonization.	ADSPMLOr
UPGRADING OF THE RAIL LA SPEZIA - PARMA "PONTREMOLESE"	Needs of intervention of upgrading of the Rail La Spezia – Parma "Pontremolese" (see also focus below), strategic for the port.	ADSPMLOr MERCITALIA INTERMODAL OCEANOGATE LIGURIA REGION
DASHBOARD TO MONITOR UNITS	Need to access to a dashboard that allows the monitoring of the intermodal unit along the entire LA SPEZIA - VERONA – ROSTOCK corridor (new demand for ICT oriented transport services).	ADSPMLOr LSSR LSCT TDG
STATUS OF THE NETWORK AND SERVICES	Need of displaying the status of the network and services in real time.	ADSPMLOr LIGURIA REGION
DIGITAL CONNECTION BETWEEN FAR OPERATORS	Need of communication with operators of distant geographical contexts (in a cross-border dimension of the Central Europe countries, using the TEN-T	ADSPMLOr HANNIBAL LSSR

	Corridors), linking the port of La Spezia to its inland market.	LSCT TDG MERCITALIA INTERMODAL RFI
DATA EXCHANGE IN THE CORRIDOR - INTEROPERABILITY BETWEEN ICT PLATFORMS (eg. PCSs, other Platforms, PIC)	Need of exchange data, through the platform, between the own ICT management system and that of the other operators involved in the corridor. Interoperability between: Port Community Systems; previous CMP developed in WiderMoS; RFI PIC Platform; etc.	ADSPMLOr LSSR LSCT TDG OCEANOGATE LIGURIA REGION MERCITALIA INTERMODAL RFI
LIMITATION OF INEFFICIENCIES	Need to limit the inefficiencies due to the lack of communication between operators. Increase efficiency and effectiveness of the logistics network at businesses' disposal.	ADSPMLOr HANNIBAL LSSR LSCT TDG LIGURIA REGION
LIMITATION OF ERRORS	Need to limit errors in the transmission of data related to the load of the intermodal unit.	ADSPMLOr LSCT TDG
PREVENTION OF DAMAGES	Need of prevention of damages related to inefficiencies and errors. Higher safety in the transportation of goods.	ADSPMLOr LSCT TDG
CUSTOMS OPERATIONS	Need to extend the use of the platform also in the customs field (eg. facilitation of customs clearance in the place where this is most appropriate). Speeding up customs clearance procedures.	ADSPMLOr HANNIBAL LSSR LSCT TDG LIGURIA REGION
STATISTICAL DATA COLLECTION	Need for the Public Administration to access to statistical data on the use, for intermodal transport, of the railway in order to improve it and further incentivize it. Final aim of a greater	ADSPMLOr LIGURIA REGION

	respect for the environment, thanks to the CO_2 emission reduction.	
SHARING INFORMATION ABOUT THE LAST MILE OPERATIONS	Need to share and make available the data related to the operations that occur in the last mile, beyond the jurisdiction of the Rail network management Company.	ADSPMLOr RFI
SHUNTING NEEDS	Need to manage all the information regarding the rolling stock, the load (type and layout on the train) as well as any customs information; useful for planning purposes in terms of primary and secondary shunting.	ADSPMLOr LSSR
REDUCING DWELL TIME OF GOODS IN PORT	Need to significantly reduce the dwell time of the goods in the port. While, for a "standard" container, delivery can be made only after the completion of different formalities (eg Customs operation and Emission delivery order), for the container that acquires the status of "fast corridor" the re - load on a railway wagon can be realized directly after unloading from the ship.	ADSPMLOr LSCT TDG

5.6. Hungarian Danube ports

Short title of need	Description, justification	Identified by (organisation)
Integrated information system for Hungarian ports	There is a need for an integrated port management information system complying with the needs of the Danube terminals in Hungary. The activities had been started by the KIR project in 2017.	ITM, MDKSZ, Port of Baja, RSOE
Joint promotions of IWW and ports	There is need for joint promotion and marketing for inland navigation and ports in Hungary for awareness and a positive image.	National Port Development Plan, MDKSZ, RSOE
Attracting new companies and industries into ports	Increasing awareness and marketing to attracte new companies into port activities.	National Port Development Plan
IWT Loading Plan Software	IT tool for planning and administration of IWT Loading Plan for Danube container transport.	RSOE, MCC

Adopting common Upper Rhein Container List	Adoption of common Upper Rhein Container list data format and layout from RPIS CEF project	RSOE, MCC

5.7. Quadrante Europa Freight Village

Short title of need	Description, justification	Identified by (organisation)
Lack of railway track and trace system	There is not visibility of the freight trains when are travelling on the network so in case of delays the operators are not ready to face promptly the problem	Terminal managers
Improvement of the terminal's gate access procedure	The damages on the loading units are detected manually. The same goes for the shipping documents check. These two procedures cause long queues outside the terminal gates	Terminal managers and dispatchers
Shortage of buffer areas	In the dry ports like the freight village of Verona the majority of the loading units managed are trailers that are not stackable. Therefore, in the rush hours and over the weekend the space available is reduced, causing sometimes slowdowns in the terminal activity	Terminal managers and dispatchers
Reduction of greenhouse emissions	The raising globalization has increased the traffic flows in the last years. The consequence is represented by more heavy vehicles travelling in the freight village area that have enhanced the level of greenhouse emissions	Terminal managers, dispatchers, citizens
Creation of a freight village community system	The freight village of Verona is a sort of clearing house in which players operating in different businesses are merged. Everyone uses a different an own management system so the output is a heterogeneous set of data that usually is not comparable, generating confusion	Terminal managers, dispatchers, shunting operator, railway undertakings

6. Conclusions

Based on the concluding remarks of the TNA reports of COMODALCE project partners, the following conclusions can be drawn:

- Better management of the rail transport services are needed for the ports. In connection with this request, the development of ICT is a key element.
- The modern communication techniques should be more used, instead of old fashion modes (e.g. paper based documents, phone calls, fax).
- Flexible integration of ICT systems is an important IT development for the ports.
- The continuous infrastructural development is a key element for increasing the traffic in ports, but this require high investments.
- Intermodality plays an important role in the medium and long-term development strategies. Especially the railway infrastructure development is required.
- It is very important to continue efforts to modernize port processes.

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