

D.3.2.7: Territorial Needs Assessment for the Southern Adriatic Sea Port Authority

*Ports of Bari, Brindisi, Manfredonia, Barletta and
Monopoli*

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INTRODUCTION

On the basis of Deliverable D.3.2.1: Methodology for the implementation of Territorial Needs Assessments (TNA) prepared by WP Leader, this report aims to analyze the territorial needs of the Ports of Bari, Brindisi, Manfredonia, Barletta and Monopoli.

SECTION A – Territorial Analysis, will briefly illustrate the main characteristics of the Port of Bari, focusing in particular on:

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

SECTION B – Future Scenarios. Description of measures that are either planned for the future or already being implemented. Implications and forecasts for future scenarios and the impact of above mentioned measures will be briefly discussed, taking in account also the impact of future infrastructures. In addition to future scenarios and measures that are specific to the Ports of Bari, Brindisi, Manfredonia, Barletta and Monopoli.

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

SECTION D – Analysis of IT systems. Describes the implementation and the upgrades of ICT systems and particularly the Port Community System (PCS) in the Ports of Bari, Brindisi, Manfredonia, Barletta and Monopoli, focusing in particular on:

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

SECTION E – SWOT Analysis. Reports the strategic evaluations about the Ports of Bari, Brindisi, Manfredonia, Barletta and Monopoli using this analysis instrument.

SECTION F – Main Results. Brief summary of findings.

A: Territorial analysis

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

Apulia is a region in Southern Italy bordering the Adriatic Sea to the east, the Ionian Sea to the southeast, and the Strait of Otranto and Gulf of Taranto to the south. The region comprises 19,345 square kilometers (7,469 sq mi), and its population is about four million. Puglia is the easternmost region of Italy and one of those with the greatest coastal development with an extension of the coasts of about 865 km. Its territory is flat for 53%, hilly for 45% and mountainous only for 2%, which makes it the least mountainous region of Italy, and has a typically Mediterranean climate.

This naturalistic context is also linked to the production and enhancement of agri-food products, including 39 DOP and 13 IGP (cheeses, oils, wines, fruit and vegetables and bakery products). A added value is represent to the presence of numerous presidium Slow Food and

the presence of the "Plain of centennial olive trees", inscribed on the National Register of Historic Rural Landscapes of the National Rural Network.

The last ten years have seen a transformation of the shipping world and of the port SYSTEM absolutely not comparable with that which occurred in previous years, this certainly following the "frenzy" due to the evolution of technology and the speed with which changes have occurred to global level, both in political and economic and infrastructural terms. It was thus possible to witness the phenomenon that is called "dimensional, material and immaterial stopover".

As indicated in the PNSLP, "the different speed of growth of the geographic areas of the world has created new traffic opportunities, in fact well defined in terms of directions but by not simple quantification as well as not easy "capture" by Italian ports.

There is also an overlap of macroeconomic effects at different speeds of impact; for example, the trend of exchange ratios between currencies - which can trigger phenomena of export growth in fairly narrow time intervals - overlaps with substantial structural changes in the country's industrial fabric, with important closures and weakening of factories and production facilities, with more than long-term effects on traffic. In addition, the effects of industrial policy actions and support for internationalization, which can have positive effects on the flow of goods, must also be remembered.

At the infrastructural level the element that has most affected and is affecting traffic is the doubling of the Suez Canal and the Panama Canal with the consequence of the modification, in numerical terms, of the ships and the speeding up of the passage itself; this has meant that the Mediterranean Sea assumes even more its role of centrality in the exchange and global maritime traffic.

The second phenomenon that has strongly affected the mutation of the scenario is to be found in the so-called "Naval gigantism" which saw the setting up and entry of 18 / 20,000 TEUs with an increase in cargo hold of about 25-30% compared to previous-generation container carriers.

The Southern Italy, favors maritime traffic which is 60% of the entire transport chain, with a value significantly higher than the national average. The overall movement of solid (46%) and liquid (47%) bulk represents on average 43% of the entire national movement, with a positive impact on the presence of maritime enterprises equal to 33% of the national figure.

The productive system of Puglia and its positioning in the Italian economy.

The production equipment of Puglia have for many years taken on particular importance not only for the economy of southern Italy, but for the entire country. The overall dimensions of the total added value of economic and industrial activities in the region in 2015 were the following:

- Total economic activities (€ million) 64,665.3
- Value added industry (€ million) 11,253.3

The existence of a massive infrastructure system serving the movement of goods and passengers in the region - six major ports in Puglia (Bari, Brindisi, Manfredonia, Barletta, Monopoli, Taranto), four citizen airports in Bari, Brindisi, Grottaglie, Foggia and three military airports operating in Gioia del Colle (BA), Amendola (FG) and Galatina (LE), the Interporto of Bari, logistic platforms, railway networks of FS and Railways under concession, highways and state roads). This system needs completions, technological improvements, functional connections, 'last mile' interventions, but it is already endowed with a significant consistency, thanks to massive investments made over the last thirty years, underway for some time or just started, in ports and on roads, airports and railways - and of intermodal articulations of increasing use. Most of the movement of goods produced in Basilicata, moreover, gravitates on port and railway nodes of Puglia, while a smaller part - but no less significant for some goods, such as cars built in S. Nicola di Melfi and destined for export to the United States - gravitates towards the ports of Civitavecchia, Naples and Salerno.

The Southern Adriatic Sea Port Authority gathers together the Ports of Bari, Brindisi, Manfredonia, Barletta and Monopoli all along the west Adriatic coast of Italy. The five-port infrastructure includes 57 quays of approximately 10km of total quay length, all connected to the rail and road network and served by two major international airports.

The newly formed Southern Adriatic Sea Port Authority is a public body having as its primary task to direct, plan, coordinate, promote and control port operations and commercial and industrial activities in the port. Located in the Puglia region, the Authority’s geographical scope comprises several ports: Bari, Brindisi, Manfredonia, Barletta, and Monopoli.



The carriers calling these ports ensure, among other things:

- Feeder, ro-ro and ro-ro pax connections for regional and extra-regional export imports;
- Transportation of cars and passengers to and from countries on the other Adriatic shore;
- Transit and embarkation of foreign tourists on cruise ships;
- Loading and unloading of raw materials and energy sources, as well as of various materials.

1.1 The Port of Bari

It is traditionally considered Europe's door to the Balkan Peninsula and the Middle East, and is a multipurpose port able to meet all operational requirements.

The port of Bari is located in the city center, covers about 260 thousand square meters, and is between the historic city center and the San Cataldo area. Historical port and rich in historical and cultural relevance including the Bourbon dock.



The main features of the port of Bari are the following:

- 285 hectares of basin.
- Docks equipped for all types of commercial traffic (dry and liquid bulks, containers, goods in packages, steel products, etc.)
- Docks serving ro-ro and ro-pax ferry boats (Albania, Greece, Croatia and Montenegro)
- Docks serving cargo (from/to Mediterranean Sea and Black Sea)
- Docks serving cruise ships and related accommodation
- Port Core along the Helsinki-Valletta corridor
- Services of mooring, pilotage, security, and other services related to passengers

- Port Community System (GAIA)
- PMIS - Port Management Information System
- Collection and disposal service for ship-generated waste and cargo residues

Infrastructural analysis

The port of Bari is located north-west of the old city and its boundaries are included to the west by the dock San Cataldo and to the east from the new Foraneo dock. Due to its location, in the south-east of Italy, it is traditionally considered the gateway to Europe to the Balkan Peninsula and the Middle East.

The current configuration of the Port of Bari is the result of a series of interventions that have followed over time as new needs arose or particular trends emerged in the sector maritime transport.

The port area extends for about 285 hectares with a total development of operational docks of approximately 3,800 ml, affected by different and heterogeneous types of traffic in transit, which have the exchange both of goods (conventional, black and white bulk, Ro-Ro and cars and steel products), both of passengers (cruises and ferries), increased in recent years thanks to the new Terminal structure Cruises, and ferry traffic with Croatia, Montenegro, Albania and Greece.

The port area is separated from the rest of the city by a perimeter fence, which delimits the basin.

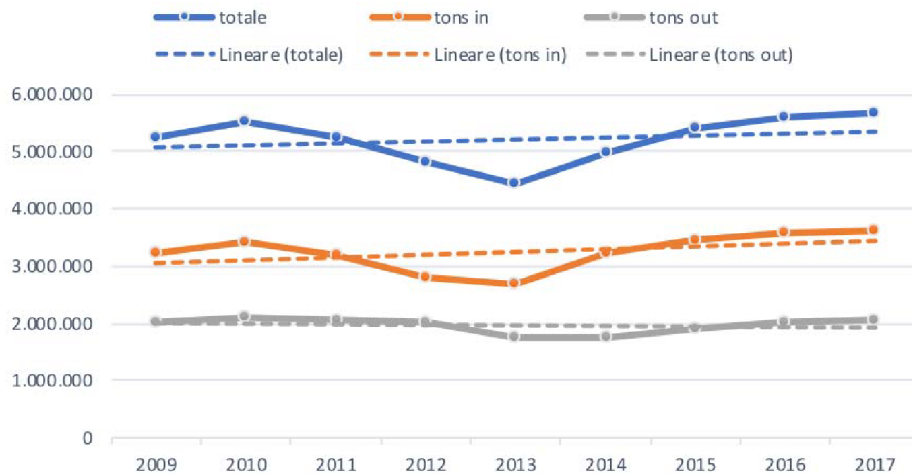
The stretch of water of the Port of Bari of approximately 209 hectares is artificially protected by the Molo Foraneo dam (breakwater), which opposes the actions generated by the marine weather climate of the neighborhood, and in particular by the waves coming from the main wind. In the Port of Bari the following docks are identified in Darsena di Levante, Darsena di Ponente, Darsena Interna and Darsena Vecchia.

It is possible to make a brief description of the port area starting from the Internal Dock with the " Molo S. Vito " which allows the mooring of ferries for extra-Schengen destinations and the " Vecchio Molo Foraneo " used for the mooring of nautical vessels, tug boats, moorers and firefighters (docks 1 to 9). Next is the Darsena di Ponente used for mooring ferries with Schengen destination and cruise ships (docks 10 and 11). Continuing in the Darsena di Levante, the docks "Deposito Franco" and "Molo di Ridosso" are used for the mooring of cruise ships and ferries to Schengen, while on the Mezzogiorno quay there are grain silos (docks 12 to 15). Also in the Darsena di Levante, close to the I and II arm of the new outer dock, there is an area divided into two areas, the first of which is rectangular in shape and the second towards the east in the shape of a "crescent" which houses the large part of the port's commercial activities (docks 16 to 23). Proceeding counter clockwise there is the third arm of the new breakwater which is used to stop no operational ships (docks from 24 to 31a) and the IV and V arm of the new breakwater which currently have the exclusive function of defending the port. The Marisabella area follows, where the fill provided by the Port Master Plan, partially built, it is currently used for parking vehicles awaiting boarding on ferries while work is in progress to complete the aprons of the entire Pizzoli-Marisabella area.

2. Multimodal transport: supply and demand analysis

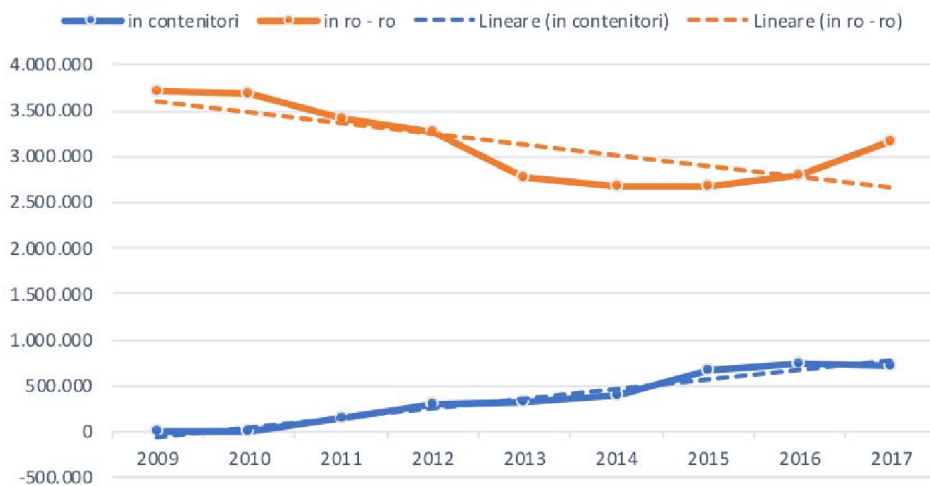
From 2009 to 2017, the Port of Bari handled approximately 5,218,000 tons of cargo

GOODS - BARI *



it is interesting to read its further decomposition according to the their carrier.

PASSENGERS RO-PAX AND CRUISE*



*Data extrapolated data from the PCS Gaia (source: ADSP MAM).

The Port of Bari is not connected to the national railway network, so its modal share is represented by 100% of road transport

Yet, the Port of Bari is located close to the RRT of Apulia (Interporto Regionale della Puglia), which is situated less than 5 km from the nearest highway exit, the port of Bari and the international airport of Bari Palese.

To encourage rail transport, the Interporto Regionale della Puglia offers to logistics companies and freight forwarders the opportunity to use its intermodal terminal. This comprises of 4 tracks used to organize trains to transport all types of containers, swap bodies and semi-trailers on national and international routes. The terminal also offers a storage area for containers and other facilities (groupage, maintenance, etc.).

The Interporto is directly accessible from the Bari highway ring road (exit n°5 Bari San Paolo/ Interporto) and is connected to the central railway station through the subway line Bari-San Paolo.

B: Future Scenarios

The port of Bari constitutes regular feeder connections with the ports of Gioia Tauro, Piraeus, Damietta / Port Said while the Port of Brindisi has developed a strong specialization in ro-ro and ro-pax ferries connections in the segment of the Motorways of the sea on the north route - south linking the Upper Adriatic to Sicily.

As well as for ro-pax connections with Albania, thanks to the lines with Durres and Vlora, as well as with Greece and its Ionian islands especially in the summer to support cross-border tourist flows

The geographical positioning of the port, the presence of a lively economic system, the drive for innovation and higher education carried out by the Apulian universities are elements that can constitute a significant starting point for the attraction of investors, especially foreigners, oriented to stabilize production aimed at expanding markets in the southern and eastern Mediterranean.

The essential strength is linked to its barycentric position and the better productivity of its catchment area which, already at present, saturates the port structures, which are actually very modest. On the other hand, the port does not have direct rail connections and suitable port spaces.

The first weakness is difficult to overcome, even if an efficient "last mile" connection with the nearby interport that should include the Ferruccio airport could mitigate this criticality.

As for the second aspect, the focus on the port of Bari shown below identifies the possible and partial solution to the problem in a fill outside the outer pier. In any case, the impossibility of finding adequate spaces that guarantee high standards of safety and working efficiency, makes it necessary to find important retroport areas that allow the development of the port.

As already mentioned, the port of Bari has sufficiently adequate loading / unloading and storage facilities, even if the mooring dock is too short for the ships currently in operation.

On the other hand, while proceeding with a better optimization of the use of sylos, the airport does not allow to significantly increase traffic in this sector. Among other things, we must reflect, with the current configuration of the port, on the possible conflict between the grain traffic and the necessary adaptation of the structures intended for cruises and on the lack of a real agri-food center, capable of allowing the movement of perishable goods

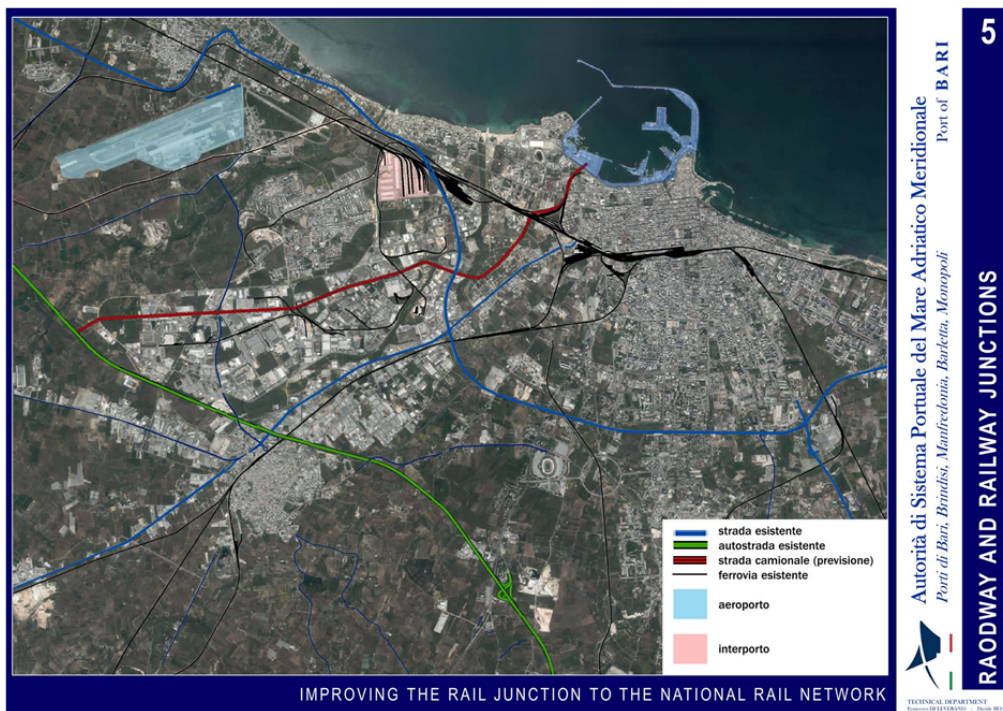
From an infrastructural point of view, the main weakness of the port of Bari is made up of more than modest spaces both for loading and unloading operations and for customs controls. This slows down the boarding / disembarking operations considerably. Furthermore, the lack of dedicated and fast connections with the road / railway network creates many conflicts with city traffic and makes access to the port extremely slow. In contrast, the port has adequate reception facilities for passengers.

In the context of the detailed analysis of the individual ports, the POT, especially with reference to the priorities to be given to the infrastructure investment policy, has been able to grasp some specificities / critical issues that are intended to be presented below, albeit in addition.

For Bari:

- Lack of dedicated berths for container ships.
- Insufficient state-owned areas for temporary custody of containers.
- Impossibility of handling containerized dangerous goods.
- Critical issues in the simultaneous management of traffic flows, lengthening of control times on passengers (extra schengen), insufficiency and inadequacy of the pre - boarding areas, insufficient reception facilities for cruise passengers.

Roadway and Railway

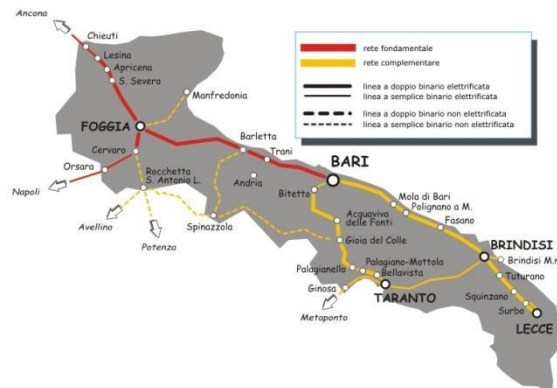


Rail transport

The priority objectives of the investments of the fundamental railway structure, contained in the PON Infrastructures and Networks (Priority Axis I, with 1.094 billion Euros by 2023) or in

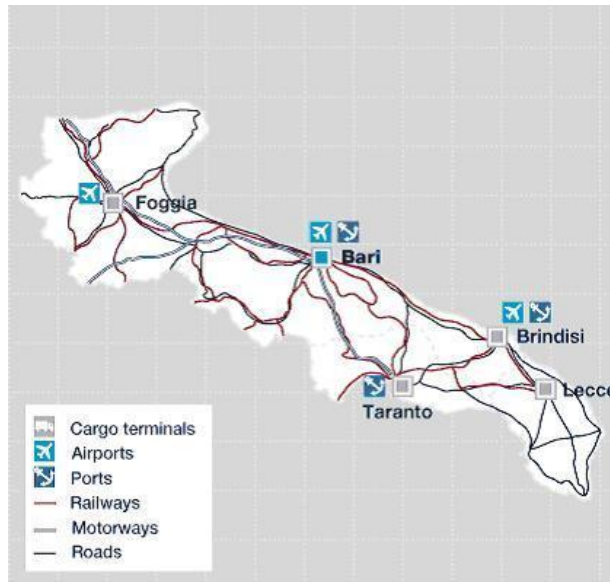
the MIT-RFI Program Contract, contribute directly and primarily to the improvement of the Area Integrated Logistics Puglia Basilicata, as they represent the main corridors of communication of the ALI for exchanges outside the region. The priority investments are for:

1. Strengthening and improvement of the High Speed / High Capacity of the Naples-Bari ridge (TEN-T network and main hub for the Tyrrhenian ridge);
2. Efficiency of the Adriatic backbone aimed at increasing capacity and overcoming the limitations of shape and module for freight transport



Road transport

Particular attention must be paid to terrestrial integration with the railway network in order to intercept long-distance traffic that currently mainly uses the road system consisting of the Adriatic highway backbone linking Lecce, Brindisi, Bari, Foggia with northern Italy but also that towards Naples, Rome, Florence.



Higher-level planning. Port planning and its implementation status

As regards the structural adjustments, AdSP inherited from the former Port Authority numerous projects e contracts in progress which, due to administrative continuity and contractual commitments undertaken, were managed in continuity. From the needs analysis already carried out, possible structural adjustments have already been defined which require the modification of existing regulatory plans.

The final choice of the necessary adjustments and the feasibility and sustainability study of the same will be carried out downstream of the discussion with stakeholders and with local authorities, in order to metabolize and share the choices and development objectives.

- infrastructure adaptation to keep pace with the rapid evolution of the needs of the carriers (dredging of the backdrops, strengthening of the docks, rearrangement of rear - dock spaces, improvement reception of passengers, raising of intermodality.
- integration, development and accessibility of support services through the use of new technologies.

- strategic and operational marketing for the cruise and sea highways sectors.
- joining with energy and environmental planning

The road interventions, in correspondence with the access to the port in the Marisabella area, for the connection to the "Camionale di Bari", a strategic work on infrastructure and transport, in order to connect the port to the retroport areas, to the intermodal logistic nodes as well as to the main road system by facilitating the movement of passengers and vehicles and eliminating the critical issues currently existing in some, albeit limited areas of the city, for the transit of heavy vehicles in large quantities.



C: Mapping out stakeholders

| Local Public Authorities | |
|---------------------------------|--|
| Name of the organisation | Address |
| Città Metropolitana di Bari | Lungomare Nazario Sauro, 29 – 70121 Bari |
| Comune di Brindisi | Piazza Matteotti, 1 |
| Camera di Commercio di Bari | Corso Cavour n. 2 - BARI |
| Camera di Commercio di Brindisi | via Bastioni Carlo V n. 4 Brindisi |
| Provincia di Brindisi | Via De Leo, 3 - 72100 Brindisi |
| Provincia di Bari | Lungomare Nazario Sauro, 29 – Bari |

| Regional Public Authorities | |
|--|---------------------------------------|
| Name of the organisation | Address |
| ENAC Puglia | Via XXV Aprile, 74 - 71121 Foggia |
| Dipartimento mobilità, qualità urbana, opere pubbliche, ecologia e paesaggio | Lungomare Nazario Sauro, 70100 - Bari |
| Dipartimento sviluppo economico, Innovazione, Istruzione, Formazione e Lavoro | Lungomare Nazario Sauro 70100 Bari |
| Dipartimento Turismo, Economia della Cultura e Valorizzazione del Territorio | Lungomare Nazario Sauro, 70100 - Bari |
| Sezione infrastrutture per la mobilità - Regione Puglia - Dip. Mobilità, qualità urbana, opere pubbliche, ecologia e paesaggio | Via G. Gentile, 70100 Bari |
| Sezione Traposto pubblico locale e grandi progetti - Regione Puglia - Dip. Mobilità, qualità urbana, opere pubbliche, ecologia e paesaggio | Via G. Gentile 70100 Bari |
| Asset - Agenzia regionale Strategica per lo Sviluppo Ecosostenibile del Territorio | via G. Gentile, 52 - Bari |

| Infrastructure & Providers | |
|---|---|
| Name of the organisation | Address |
| Ferrovie del Sud Est - Autolinee Ferrovie del Sud Est | Giovanni Amendola, 106/D - Bari |
| Ferrovie Appulo Lucane / Bus Ferrovie Appulo Lucane | C.so Italia n.8 - Bari |
| Ferrottramviaria | Piazza A. Moro, 50/B - Bari |
| Cotrap | via Bruno Buozzi, 36 - Bari |
| Sita | Via Bruno Buozzi, 36 - Bari |
| STP | V.le Lovri n° 22 - Bari |
| STP Lecce | via Lecce 99 - San Cesario di Lecce |
| STP Brindisi | Contrada Piccoli Z.I. - Brindisi |
| CTP Taranto | Via Del Tratturello Tarantino 5/7 - Q.re Paolo VI |
| Miccolis Spa | Via delle Mammole, 26/28 - Modugno |

| Maritime agencies | |
|--------------------------------|--|
| Name of the organisation | Address |
| Bari Shipping | info@barishipping.it |
| Blumare | gaiagate@blumare.eu |
| Discovery Shipping | massimo.sciscio@discoveryshipping.it |
| Dolphins | shipping@dolphinsbari.com |
| Morfimare | l.morfini@morfimare.it |
| P.Santelia | santeliatraghetti@gmail.com |
| Portrans | amministrazione@portrans.it |
| Seamed Trading Shipping S.R.L. | john.prudentino@seamedtrading.com |
| Spamat | spamatbari@spamat.it |
| Titi Shipping Bari | croazia@titishipping.it |
| Banchero & Costa | bancostabr@bcagy.it |
| Discovery Shipping s.r.l. | info@discoverishipping.it |
| Elica Srl | brindisi@elicasrl.com |
| Gorgoni Srl | agency@gorgonishipping.com |

| | |
|-------------------|--|
| Poseidone Srl | poseidone@poseidone.it |
| Seagate Sas | operations@seagateagency.it |
| Titi Shipping | info@titishipping.it |
| Zaccaria & C. Srl | zacmar@tin.it |
| Albatros | shipping@albatrosweb.it |
| Seamed Trading | info@seamedtrading.com |
| Sermar | info@sermar.net |
| SPG | spg@pgbrindisi.it |

D: Analysis of IT systems

The Port Community System (PCS) of the Port of Bari is called GAIA – Generalised Automatic exchange of port Information Area – and was developed within the GAIA project co-funded by the Interreg Italy-Greece Cross-Border Cooperation Programme 2007-2013.

The Port Community System is an IT platform that allows the intelligent and secure exchange of information between public and private entities of the maritime-port cluster. The PCS optimizes, manages and automates port and logistics services by creating efficient processes, reducing the time required for procedures and minimizing the use of paper documents. GAIA is the Port Community System of the Port of Bari with which some port processes are managed digitally and with which innovative information services are offered to passengers and operators as well as free wi-fi internet connection in the passenger parking areas. GAIA constantly monitors the entire port process in real time, for each ferry ship departing from the Port of Bari, from the Security Card issuing procedure until the ship arrives at the destination port. It provides information on the status of boarding, on weather conditions, on the arrival and departure times of ships and, through the tracking function, notifies passengers of the exact position of ships during navigation and arrival times. All travel information is thus displayed directly on users' mobile devices, such as smartphones, tablets, notebooks, allowing

constant and timely updates on boarding times and any ship delays, free of charge, making the travel experience and stay in a more peaceful city. Detailed information, in particular on road conditions, is also made available to road hauliers who, through these services, can thus decide on the best possible route to reach their intended boarding, as well as request online authorizations for access to the port and areas of security. All the information generated by Gaia is also accessible in the port through special interactive kiosks. The use of GAIA has, in fact, revolutionized port activities by improving the work of operators, information management and the movement of passengers and vehicles, facilitating security checks by the police force.

Within the project, seven modules were activated:

-GATE, access control system for passengers and vehicles. The Gate module, with the introduction of the Security Cards and Access Authorizations equipped with barcodes, has speeded up the procedures for boarding passengers and vehicles, has regulated the access of authorized personnel to the port, increased navigation safety and improved the effectiveness of border controls;

PASS, functionality dedicated to port operators for the online management of requests for access to port areas subject to the regulation of security plans. Using PASS, it is no longer necessary to go physically to the Port Authority or PFSO offices and no more paper requests and / or copies of documents are required. With PASS, shippers and dealers can make online requests on behalf of third parties who receive access authorization directly on their smartphone via email. This service, also available for all UIRNET-affiliated vehicles, has drastically reduced the average time for receiving a port access authorization, has completely eliminated the circulation of paper forms and copies of documents and simplified the control procedures at the gates .

SHIPS, ship tracking system. Using the AIS data provided by the ships, also thanks to the cooperation with the national system of the Port Authorities, the system allows to elaborate in real time the arrival and departure forecasts of the ships in the Ports of the Levant both for the benefit of passengers and port services. .

IRIS, multichannel information system. It publishes the information processed and generated by the various GAIA subsystems on the LED information panels, kiosks, touch screens, TVs as well as on the public portal of the Body.

TRAVEL, support portal for passengers in transit in the Port of Bari. With the functionality, itineraries and tourist routes are available in the province of Bari and in Puglia.

eGAIA, App for mobile devices (iOS and Android smartphones). This service makes the information published on the Travel portal and in the Iris form available on mobile devices. The navigator, selecting the topics of his interest, will be updated with push notifications on the latest information published or on any changes to routes and itineraries and will be able to consult the detailed map of the port of Bari to easily reach the rest areas and the embarkation docks.

Data Warehouse, business intelligence tool. It is a digital archive which, through innovative semantic analysis techniques, allows the processing of all the data of the GAIA system in order to assist, suggest and dynamically support the decision-making processes of the local, regional and national authorities in the field of maritime transport and of intermodal logistics.

Also, GAIA has the following features:

ALERT, it is a real-time notification system of events generated by GAIA PCS. Through Alert module, Coast Guard and Border Police activate automatic searches of people and vehicles present in the system.

DATA TRAFFIC, it enables the electronic submission of administrative information relating to passengers and vehicles (arrivals and departures from Bari). Allows Port Authority to use the data for statistical and billing purposes.

STATISTICS, Automatic analysis on integrated data/archives retained by GAIA sub-systems, real time elaboration of ESPO data models, Data Warehouse

GAIA is composed of the following hardware:

- Server
- 3 Data centers
- 25 racks 12Units/42Units
- 20 phisycal servers
- 60 virtual servers
- 460GB ram
- 30 power supply units
- Networking
- 1 firewall

- 20 optical switches
- 3 km optical fiber
- 20 wi-fi antennas
- 70 wi-fi palm systems
- 1 automatic/integrated gate
- Security & Anpr cameras
- 60TB storage space
- 7 anpr cameras (on port security gates)
- 10+180 security cameras
- Storage
- 5 storage units
- 60 Hard disks
- 100 TB of space capacity

Concerning the interoperability with other IT systems and related upgrades, GAIA connected to:

- 2011: shipping companies
- 2013: document management system
- 2014: Uirnet – Italian Logistic Platrom
- 2015: intelligent gates
- 2016: container terminal
- 2017: Port Management Italian System (PMIS – Coast Guard)
- 2019: AIDA customs

The communication between GAIA and other systems is made by web services based on ESB. The system has been certified since 2014 by Italian Agency for Digitalization.

GAIA interoperates with heterogeneous systems by means of orchestration services (modelling processes inside the system).

Currently, GAIA has 1845 users:

- 115 public bodies - Customs Agency, Port Network Authority, Health Ministry, Public Works Administration, Environment regional agency
- 197 police and security authorities - Coast Guard, Border Police, Customs Police, Security Guards

- 512 Shipping and Port operators - Agencies and Shipping companies, Concessionaires, Port enterprises, Pilots, Mooring men
- 1021 logistics users - Road transport and shipping operators

Some figures about GAIA operations:

- Ferries
- Registered: 4,200,000 passengers; 2,100,000 vehicles; 6,300,000 gate transits
- real-time security card issue during check-in operations at the agency

Authorisations:

- 400,000 authorizations managed; 20,000 active; 9 mln registered accesses
- 3-minute average time to request and obtain the authorization

Database transactions:

- More than 10 mln of daily transactions; about 300 simultaneous users
- 10 Production databases; 2 test database; 1 replica database

Service continuity:

- 17,150 departures managed and 27 control gates simultaneously active with a 99.95% coefficient of service continuity

All in all, GAIA can be interpreted as a big data warehouse for the following functions:

- Data volumes - Databases for GAIA PCS and services working
- Data sources - Unstructured and unconventional data, linked to GAIA PCS (eg. IoT and environment sensors, anpr cameras)
- Pelagus - Italian Coast Guard Headquarters connection for Vessels automatic identification system (AIS system)
- ISMAEL - Prediction system of environment impact of logistic activities on ports
- S.D.I. - Interoperability with inter-force police national system
- TAPIN - Data warehouse and data exchange with Greek ports (Igoumenitsa, Patras, Corfu)

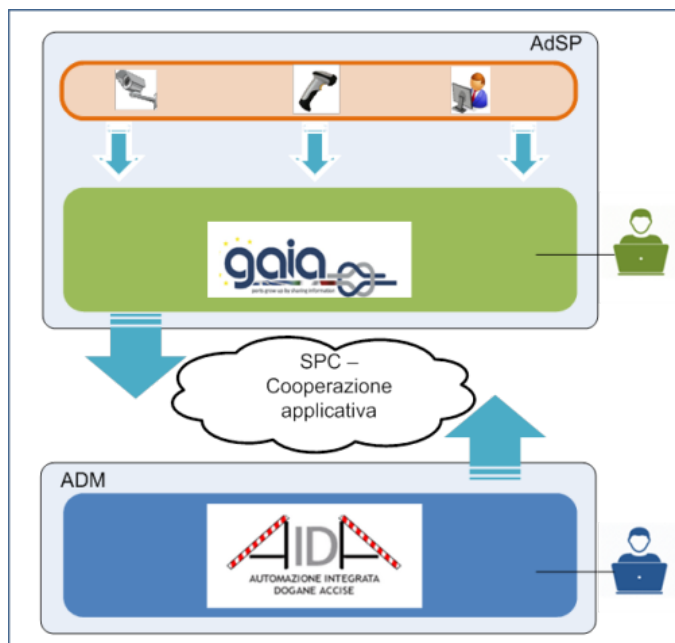
GAIA – future scenarios

Recent and future developments of GAIA include:

1) Interoperability with AIDA Customs IT service

The project was designed by Port Authority with the aim to develop interoperability services between AIDA Customs system and GAIA Port Community System, in order to:

- Speed up the transit of goods in port logistic nodes
- Digitalize customs procedures linked to the transit of goods
- Manage in real time the goods flow in port facilities, working on actual critical moments
- Automate the ports procedures of goods gate-in/out
- Get information about customs payment and tracking of goods status



2) Testing of 5G

Bari will be the first 4.0 port in Italy able to improve security, access control and logistics by using IoT solutions coupled with digital automation, which are important steps specifically for cloud robotics and intelligent transportation systems.

Use cases examples:

Security services (face recognition)

Information services (people counting and density estimation)

Port logistic services (container IoT)

3) Installation of eGates

In order to improve security at the border (European entry exit system EU EES 2017-2226) a EES border control solution will be experienced in the port of Bari able to:

verify and collect departing passengers identity with the cooperation of Border Police;

enable fast and convenient border clearance process for any type of travelers as traveler pre-check;

Give real-time information to Italian Authorities and VIS system (Visa Information System);

Cooperate with PCS GAIA

4) GAIA 2.0 evolution

The PCS GAIA 2.0 project is composed by 5 actions which will allow the Port Authority to upgrade the application/system infrastructure:

PCS software and hardware technology upgrade, extension to Brindisi and Manfredonia ports;

Front office system development in order to simplify the administrative procedures between port and business users;

Gate expansion with automated access control barriers, plates recognition and container tracking;

Public (passengers) and business (port operators) WiFi network expansion to all ports of Authority network;

Security and operative video surveillance extension in ports of Bari, Manfredonia, Barletta e Monopoli.

E: SWOT Analysis

In an overall perspective view, a formulation can certainly help by means of a SWOT analysis in order to highlight, even instantly, the strengths and weaknesses as well as the opportunities and threats of our port system.

| SWOT | |
|--|--|
| Strengths (S) | Weaknesses (W) |
| <ul style="list-style-type: none"> ● Strategic position ● Presence of relevant production chains ● Strong presence of international operators on the Ro-Ro ● Strong tourist attraction of the territory ● Multi-purpose identity ● Incidence of maritime trade towards the Mediterranean ● In Bari, more than one and a half million passengers | <ul style="list-style-type: none"> ● Inefficiencies on intermodal trade ● Diversity of ship services costs ● Saturation of spaces for ferries ● Insufficient intermodal connections ● draft seabed ● Absence in the TOP ranking ● Inefficiencies on intermodal trade ● Neighboring spaces ● Long time for checking goods in transit ● GAIA PCS only available for Bari, but not for the other ports of the Southern Adriatic Sea Ports Authority |
| Opportunities (O) | Threats (T) |

| | |
|--|--|
| <ul style="list-style-type: none"> • Corridor Scan - Med • Mediterranean strategy • Establishes Special Economic Zones • High speed Naples Bari • Development of the Sea Ways • Short Sea Shipping • Growth opportunities in the distribution of LNG • Cooperation with the local University | <ul style="list-style-type: none"> • High number of competitors • Possible openings of new intercontinental routes • Development of alternative transport sectors • Traffic reduction • instability Middle East and North Africa zones • Decreased cruise flows in the Mediterranean • Industrial underdevelopment of the south Italy |
|--|--|

F: Main results

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

Ports are among the main elements of territorial competitiveness. This is the reason why we expect to improve the services offered to the users, for increasing security and quality of life to those who daily or occasionally interact with the Port.

Furthermore, we will necessarily try to overcome the challenge of quality and territorial integration with a model of governance based on innovation and institutional cooperation:

- new opportunities for port growth
- expansion of intermodal transport services and solutions for passengers
- develop the sustainable mobility and strengthen the collaboration with all possible stakeholders improve
- extend the pre-existing services to other ports of Southern Adriatic Ports Authority
- Therefore necessary to have a clear picture of the convergent objectives
- Development and safety of city-port link infrastructures.
- Improvement of reception and transport services for passengers.
- Realization of an integrated information / enhancement system
- Improvement of the competitiveness of economic activities