



## T2 LOWER ADRIATIC PORTS: SMART

## INTEGRATION PROCESS Version n. FINAL

D.T2.3.1 – Technical Study for the harmonization of in/out passenger flow

Dates 09/2023

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## 1 Acronyms and Abbreviations

ACRONYM	DESCRIPTION
AdSP MAM	Port System Authority of the Southern Adriatic Sea
APD	Port Authority of Durres
ATD	Current Time of Departure
CDP	Port authorities
CRIO	ExChange of InfoRmation in Adriatic POrts
DTLF	Digital Transport and Logistics Forum
EES	Entry Exit System
FENIX	European Federated Network of Information eXchange in LogistiX
GAIA	MAM AdSP PCS
GAIA-GATE	GATE module of the PCS GAIA
GDPR	General Data Protection Regulation, EU Regulation n.679/2016
ISPS	International Ship Port Security
ITS	Intelligent Transport System
LASTING	Lower Adriatic Sea - Transit Intermodal Networking Grid
LUBARIS	LUka BAR Information System
PAX	Number of Passengers
PDA's	Portable Digital Assistance
PCS	Port Community System
PFSO	Port Facility Security Officer
RFID	Radio-Frequency IDentification
SMART	Safety, Mobility, Automated, Real-time Transit
TEN-T	Trans-European Transport Network
UPS	Uninterruptible Power Supply
VBS	Vehicle Booking System

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### 3 Introduction

This document constitutes the report relating to the Deliverable " **D.T2.3.1 - Technical Study for the harmonization of in/out passenger flow** " containing the results expected from the assignment for the professional assignment for the drafting of a technical study on passenger flows and coordination of activities relating to the pilot actions of Bari, Bar and Durres within the LASTING project - financed under the Interreg CBC IPA Program – Italy, Albania, Montenegro 2014/2020. [CIG Y2C3B75D83 - CUP: F95D2200000007] Order letter pursuant to art. Art. 18, co. 1, of Legislative Decree 36/2023.

The **LASTING project** aims to improve the multimodal connection system based on the analysis of passenger mobility in the lower Adriatic as well as to improve connections between the main cross-border transit infrastructures and the trans-European corridor network.

Since the issue of efficiency in transport management has a clear European scope, in the perspective of connecting the Lower Adriatic Transit System to the TEN-T (Trans-European Transport Network), a cross-border approach has been adopted to address the common challenges of improving in particular passenger traffic.

## 4 Project ports

This chapter describes the characteristics of the ports of Bar, Durres and Bari useful for framing the specific activities for the creation of the pilot systems envisaged in the LASTING project.

### 4.1 Port of Bar

The **port of Bar**, founded in 1906, is the main mercantile port of Montenegro, in the smallest of the former Yugoslav republics, it overlooks the Mediterranean and is an open door to the Balkans. Today it is a port of regional importance in the field of bulk cargo, Ro/Ro and ferries. There are two operators working in the Montenegrin port: one, public, handles rolling stock and cereals, the other, private, has exclusivity on containers.

More information can be found on the Port of Bar website: <https://lukabar.me/en/>

The port of Bar operates on Zona Franca for almost the entire port area and is managed by Luka Bar. The map of the port of Bar is represented in Figure 1. In the port of Bar there are various concessionaires, but the two main ones are Luka Bar and Port of Adria. In the port of Bar there is a single port gate where all pedestrians and vehicles pass heading towards the different areas of the port. Inside the free zone there is a high gap to the Port of Adria which however is not managed by Luka Bar.



Figure 1- Map of the port of Bar



The passenger terminal is located outside the Free zone, and is managed by the Barska Plovidba company. (<https://www.montenegrolines.net/it/>). In fact, Luka Bar does not deal with passenger traffic but only with goods traffic.

Barska plovidba Spa was founded on October 20, 2000 and operated under the Spa name “Putnicki terminal”, which was changed in 2002, by the decision of the Shareholders' Meeting. From its establishment until December 2016, Barska plovidba developed its main activity for the transport of passengers and vehicles by ferries on the routes between Montenegro and Italy (Bar-Bari-Bar and Bar-Ancona-Bar). Furthermore, the company owns two BULK Carrier type cargo ships for bulk cargo transportation. Barska plovidba Ad operates in the maritime station, located in the port of Bar on a corridor affected by important commercial flows for passengers and goods. (Budapest-Belgrade-Bar-Bari)

## 4.2 Port of Durres

The **port of Durres** is the main port of Albania. It is a multifunctional port, represents 90% of Albanian maritime trade and handles all types of goods, operating 24 hours a day, 365 days a year. The port constitutes one of the country's main interfaces on the Adriatic coast, connecting Albania with other Mediterranean and Balkan countries.

The port of Durres is managed by the Port Authority of Durres (APD). The Port Authority Law n.9130 of 09.08.2003 creates the conditions for the APD to carry out its activity as an independent self-financed body, thus increasing the possibility of responding more quickly and directly to the needs of the Port users and new challenges as an EU candidate country. The APD is the only authority responsible for activities in the port such as: loading - unloading, maintenance of infrastructure and superstructures, maintenance of the water space, maintenance of equipment and buildings and in collaboration with private shipping companies, carries out the storage and the distribution of goods. The Port Authority of Durres is responsible for planning the strategy and drawing up various plans for the development of the port of Durres, taking into account the interests of the port industry, business and trade.

The Port of Durres handles all types of goods such as: dry waste, liquid waste, general cargo, chemicals, dangerous goods, chemical waste, containers, ro-ro, heavy cargo, etc. It consists of the import of goods such as: flour, wheat, cement, fuel, building materials, coal, foodstuffs, containers and the export of goods such as: chrome ore, ferrochrome, scrap, containers, clinker and general goods.

With 2.2 kilometers of operational quays, 11 quays, the port of Durres is able to handle approximately 78% of Albania's international maritime traffic. The Port of Durres currently has a trading capacity of over 5 million

tonnes of general cargo and cargo. The development of the Port of Durres has gone through many stages to reach the point we are today, a stable, safe and attractive port and a place of value to society. After privatizing a number of services, APD is undertaking other structural and organizational changes to better respond to rapidly evolving market demands. It is undergoing renovation to become a freehold port with most operational services provided by the private sector under concession. These operational and administrative improvements receive strong support from the Albanian government, which is committed to facilitating trade across the Balkans as part of the Euro-Atlantic integration process the region is currently undergoing.

With efficient management, we enable the transport community, port customers, the use of port facilities, offering a reliable and quality service for the transfer of goods from sea to road and rail transport at competitive prices and in compliance with international standards of environmental protection.

More information about APD can be found at the following link:

<https://www.diresport.al/index.php/en/port/>



Figure 2- Map of the Port of Durres

the **Ferry Terminal** has been managed by the AFTO company (Albanian Ferry Terminal Operator - <https://www.afto.al/>). Durres Ferry Terminal is the main gateway to Albania and the Balkan region with connecting ferry lines to Bari, Ancona and Trieste. Recently, this terminal has been modernized, becoming one of the most modern terminals on the Mediterranean Sea. Every year, more than 850,000 passengers, 185,000 vehicles and 76,000 trucks pass through this terminal.

AFTO, as a subsidiary of FRS (The FRS Group, parent company of AFTO, has 50 years of experience in port and terminal management, offering a wide range of operational services in countries as diverse as Germany and Denmark. <http://www.frs.world>), has been operating near the Ferry Terminal since 2013. For the processing of vehicles and passengers, the Terminal is equipped with all the necessary infrastructure such as: check-in points, scanners, border police checkpoints and customs, scales at the counters and luggage trolleys. The services of the passenger terminal are in particular those of:

#### Loading-unloading / Refueling

- Luggage and baggage assistance (heavy loads on request)
- Load assistance on trailers and trailers
- Restaurant service

#### Load control and management

- Check the completeness and validity of the booking lists
- Preparation of data charts, vessel documentation, etc.
- Monitoring of the embarkation and disembarkation process
- Document (poster)

#### Ground assistance

- Company and welcome
- Transfer for passengers
- Check-in staff
- Security checks

### 4.3 Port of Bari

The **port of Bari** is part of the Port System Authority of the Southern Adriatic Sea (AdSP MAM), which also includes the ports of Monopoli, Barletta, Manfredonia, Brindisi and Termoli. Bari, with its geographical position, is one of the most important multipurpose airports in southern Italy and a gateway to connections with Eastern European and Middle Eastern countries.



Figure 3– Map of the Port of Bari

The ticket offices where check-in activities take place are present in the filled area of Marisabella. In the port of Bari, embarkation and disembarkation to and from non-Schengen countries is carried out with Ro/pax ferries in the "Darsena Interna" from the "Molo S. Vito".

The passenger terminal in the port of Bari is managed by AdSP-MAM.

The GAIA PCS (see paragraph 6.3.1) digitally manages boarding-only processes, both for destinations in the Schengen area and outside the Schengen area. At a process level, the management of boardings with destinations outside the Schengen area is the same as that of boardings with destinations in the Schengen area, the difference concerns only the record route which is acquired by the shipping company which, in the case of a non-Schengen route -Schengen, requires you to also provide the number and expiry date of your identity document (information which, through the GAIA-GATE windows, is made available to Border Police officials).

From the point of view of the Port System Authority there is no difference in the management of the embarkation/disembarkation process for destinations in the Schengen area compared to those outside the Schengen area, except with regard to the areas in which the operations take place rather than the the substantial difference is the absence of border/customs checks (which in the Schengen areas are carried out on a random basis rather than for non-Schengen areas it is carried out on all passengers/vehicles).

#### 4.3.1 Passenger boarding management

In the port of Bari, boarding for non-Schengen countries takes place with the Ro/pax ferries in the "Darsena Interna" from the "Molo S. Vito".

After the remodeling and redevelopment interventions, the new AC1 gate of the "Molo S. Vito" port facility in the port of Bari was activated in October 2020 ( Figure 4) and, at the same time, work began on the AC3 gate. These are interventions that the Port System Authority of the Southern Adriatic Sea carried out to increase the performance effectiveness of the system, to adapt the structures to the regulations on safety in the workplace and, above all, to comply with the provisions set out in the port security plan, for the division between Schengen passengers and non-EU passengers.



*Figure 4- Vehicular and pedestrian gates at the San Vito port facility (AC1 gate)*

Most people who board the ferries in Bari have their vehicle with them. Passengers without a vehicle are generally few, they arrive at the port by shuttle bus, get off at the ticket offices and remain in the structure until boarding. The flow of people and vehicles is managed by the GAIA-GATE system module.

- 1) Purchase of the Ticket. The passenger purchases the ticket at the agency or online sites.
- 2) Check-in. All passengers must check in in order to obtain the boarding pass which allows them to pass the subsequent security and border police checks before boarding the ships. Passengers (with or without accompanying car) are obliged to check in in port at the **Marisabella ticket office** for boarding towards Croatia, Albania, Montenegro and all operations are carried out by the Maritime Agent staff . Check-in closes one hour before the scheduled departure time and it is not possible to carry out any operations after this time.

3) Boarding. It is advisable to arrive at the port at least 3 hours before the departure time, keeping in mind, especially in the high season summer periods, that traffic and congestion of vehicles on the motorway and in the port area can cause delays in your journey to the station maritime. Once checked in and obtained the boarding passes, the passenger reaches the area dedicated to security checks on foot or by car and keeps the documents and boarding pass at hand. Follow the directions to the ship's access ramps: the on-board staff will ask for your documents and boarding pass and will show you how to reach the on-board reception or your accommodation.

#### 4.3.2 Passenger Disembarkation Management

In the port of Bari, disembarkation for non-Schengen countries is carried out with Ro/pax ferries in the "Darsena Interna" from the "Molo S. Vito".

Upon disembarkation, the vehicles are transported towards the vehicle access points, where the following are carried out:

- a) Border controls,
- b) Customs checks (if heavy vehicles or if they transport goods),
- c) Once the previous checks have been passed, the vehicles can exit the vehicle access;

Upon disembarking, passengers are channeled into the disembarkation flow of the passenger terminal, where the following are carried out:

- d) Border controls,
- e) Customs checks (if goods must be declared or at the choice of the financial police)
- f) Once the previous checks have been passed, passengers can exit the sterile area of the terminal.

During the disembarkation phase, the port security personnel (GPC) at the port security gates have no particular control tasks.

During the disembarkation phase, the GAIA PCS only records the license plates of the vehicles passing through the exit gate.

## 5 Analysis of passenger flows

This chapter analyzes the incoming/outgoing flows of passengers to and from the trans-Adriatic countries, ports of Durres, Bar and Bari based on the data provided by the ADSP-MAM statistics office.

### 5.1 Bari Shipping Lines

The shipping lines operating in the port of Bari in connection with non-Schengen destinations are:

Company	Ship	Line	Guy
GNV	<ul style="list-style-type: none"> <li>GNV AZZURRA</li> <li>GNV BLUE</li> </ul>	BARI - DURRES	RO/PAX
Adria Ferries	<ul style="list-style-type: none"> <li>AF FRANCESCA</li> <li>AF MARINA</li> <li>AF CLAUDIA</li> </ul>	BARI - DURRES	RO/PAX
Ventouris Ferries	<ul style="list-style-type: none"> <li>RIGEL I</li> <li>RIGEL II</li> <li>RIGEL VII</li> </ul>	BARI - DURRES	RO/PAX
Jadrolinja	<ul style="list-style-type: none"> <li>DUBROVNIK</li> </ul>	BARI – BAR	RO/PAX

The Ro/Pax and Ro-Ro shipping lines that operate in the port of Bari in connection with destinations in the Schengen area are:

Company	Line	Guy
Superfast	Bari – Igoumenitsa – Patras	RO/PAX
DFDS	Bari – Tuzla	RO/RO
Jadrolinja	BARI – DUBROVNIK	RO/PAX
GRIMALDI LINES	BARI - PATRAS - VENICE - RAVENNA	RO/RO
Ventouris Ferries	BARI-IGOUMENITSA-PATRAS-KEFALONIA	RO/PAX

The capacity characteristics in the transport of passengers and cars of the ships used for passenger traffic between the ports of Bari, Bar and Durres are as follows:

Ship Name	COMPANY	MAX. PASSENGERS	GARAGE CAPACITY
AF FRANCESCA	ADRIA FERRIES	2000	750ml
AF MARINA	ADRIA FERRIES	600	300 cars - 1600 ml
AF CLAUDIA	ADRIA FERRIES	950	380 cars - 2044 ml
GNV AZZURRA	GNV	2180	560 cars
GNV BLUE	GNV	1320	455 cars
RIGEL I	VENTOURIS FERRIES	1800	450 cars
RIGEL II	VENTOURIS FERRIES	2300	500 cars
RIGEL VII	VENTOURIS FERRIES	1500	450 cars

## 5.2 Passenger traffic data

The data analyzes of passenger flows between the project trans-Adriatic ports were carried out on the basis of the traffic data that were made available by the Development and Technological Innovation Department - Statistics Office of AdSP MAM in the period January 2013 - June 2023.

The available database allows the following information to be analysed:

SHIP	Ship Name
DATE_TIME_ARR	Arrival Date and Time
DATE_TIME_PART	Departure Date and Time
TSL	Gross Tonnage
PAX_SB	No. of passengers disembarking
PAX_IM	N° of passengers boarding
PAX_TRANSITS	No. of passengers in transit
MEZZI_SB_AUTO	No. of cars disembarking
MEZZI_SB_BUS	Bus number disembarking



SHIP	Ship Name
MEZZI_IM_AUTO	No. of cars boarding
MEZZI_IM_BUS	Bus number boarding
TRUCK_SB_EMPTY	No. of empty trucks unloaded
TRUCK_SB_FILLED	No. of full trucks unloaded
TRUCK_SB_TON	Tons of trucks unloaded
TRUCK_SB_TOT	Total number of trucks unloaded (Empty + Full)
TRUCK_IM_EMPTY	No. of empty trucks loaded
TRUCK_IM_PIENI	No. of full trucks loaded
TRUCK_IM_TONN	Tons of trucks loaded
TRUCK_IM_TOT	Total number of trucks unloaded (Empty + Full)
SEMIR_SB_EMPTY	N° of empty semi-trailers unloaded
SEMIR_SB_PIENI	N° of full semi-trailers unloaded
SEMIR_SB_TONN	Tons of semi-trailers unloaded
SEMIR_SB_TOT	Total number of semi-trailers unloaded (Empty + Full)
SEMIR_IM_EMPTY	N° of empty semi-trailers loaded
SEMIR_IM_PIENI	N° of full semi-trailers loaded
SEMIR_IM_TONN	Tons of semi-trailers loaded
SEMIR_IM_TOT	Total number of semi-trailers unloaded (Empty + Full)
PORTO_ACCOSTO	ADSP port where the ship arrives (Bari/Brindisi)
OP_COMMERCIAL	Vessel/traffic type classification
ORIGIN	Port from which the ship originates

SHIP	Ship Name
DESTINATION	Port to which the ship's journey is intended
MEZZI_SB_MOTO	No. of Motorcycles Disembarked
MEZZI_IM_MOTO	No. of motorbikes on board

On the basis of the available data, we provide quantitative data on arriving and departing passengers on the Bari-Durres and Bari-Bar routes.

### 5.3 Passenger traffic in the port of Bari

The overall passenger traffic on ferries on the routes connecting the port of Bari on the routes towards Bar and Durres is shown in the following table.

YEAR	LANDING	BOARDING	TOTAL PASSENGERS	% GROWTH
2013	362,350	361,269	723,619	
2014	388,903	377,391	766,294	6%
2015	416,512	381,268	797,780	4%
2016	424,813	409,049	833,862	5%
2017	436,124	406,211	842,335	1%
2018	518,416	488,925	1,007,341	20%
2019	513,432	490,184	1,003,616	0%
2020	173,527	163,876	337,403	-66%
2021	354,429	352,457	706,886	110%
2022	510,923	507,032	1,017,955	26%
(*) 2023	123,510	106,236	229,746	(*) -60%
<b>TOTAL</b>	<b>4,222,939</b>	<b>4,043,898</b>	<b>8,266,837</b>	

Table 1- Passengers Bari-Bar-Durres routes

(\*) The 2023 data are updated only up to the first half of the year. The growth variation is compared to the first half of 2022.

It is represented graphically here.

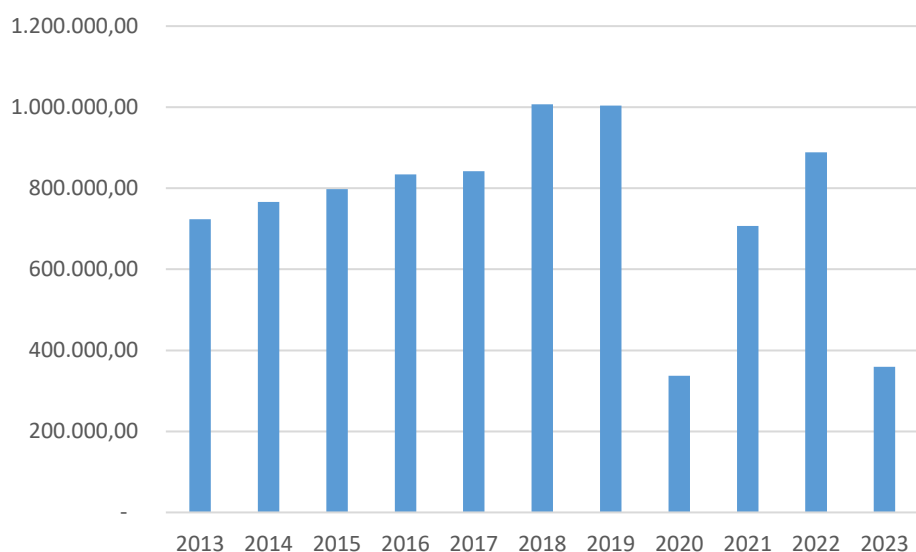


Figure 5- Passengers on the routes from Bari to Bar and Durres

#### 5.4 Passengers on the Bari-Bar route

The overall passenger traffic on ferries on the routes connecting the port of Bari to Bar is shown in the following table.

YEAR	LANDING	BOARDING	TOTAL PASSENGERS	% GROWTH
2013	21,905	21,176	43,081	
2014	21,986	20,426	42,412	-2%
2015	19,852	18,806	38,658	-9%
2016	18,641	17,042	35,683	-8%
2017	11836	8604	20,440	-43%
2018	14,249	9,455	23,704	16%
2019	8,778	5,819	14,597	-38%
2020	-	-		
2021	801	533	1,334	
2022	4,557	4,375	8,932	570%
2023	-	-		
<b>TOTAL</b>	<b>122,605</b>	<b>106,236</b>	<b>228,841</b>	

Table 2- Passengers on the Bari-Bar route

Trend in the number of passengers per quarter in the period 20.... Between the ports of Bari and the port of Durres

## 5.5 Passengers on the Bari – Durres route

The overall passenger traffic on ferries on the routes connecting the port of Bari on the routes towards Durres is shown in the following table.

YEAR	LANDING	BOARDING	TOTAL PASSENGERS	% GROWTH
2013	340.445	340.093	680,538	
2014	366917	356965	723,882	6%
2015	396660	362462	759.122	5%
2016	406172	392007	798,179	5%
2017	424288	397607	821,895	3%
2018	504167	479470	983,637	20%
2019	504.654	484,365	989.019	1%
2020	172,726	163,343	336.069	-66%
2021	349,872	348.082	697,954	108%
2022	453.010	435,696	888,706	27%
2023	58,818	71,336	130.154	-42%
<b>TOTAL</b>	<b>3,977,729</b>	<b>3,977,729</b>	<b>7,955,458</b>	

Table 3- Passengers on the Bari-Durres route

the flow of passengers in the lower Adriatic region in an even more detailed way in the project document " Passenger Mobility in the Lower Adriatic (PLMA)". as well as the reasons related to travel between the ports involved and the difficulties currently experienced in travel and their future expectations.

## 6 Analysis of the state of the art

This chapter reports the descriptive summary of the state of the art of the ICT systems used in the ports of Bar, Durres and Bari before the development of the LASTING project.

### 6.1 IT systems in the port of Bar

This chapter describes the IT systems present in the port of Bar which are involved in the management of port activities and passenger traffic.

The LUBARIS (LUka BAR Information System) system is operational in the port of Bar. It is a system that supports work activities in the port through a TOS (Terminal Operating Software) system and an ERP management system. The system has been developed since 2001, has a network of over 200 computers.

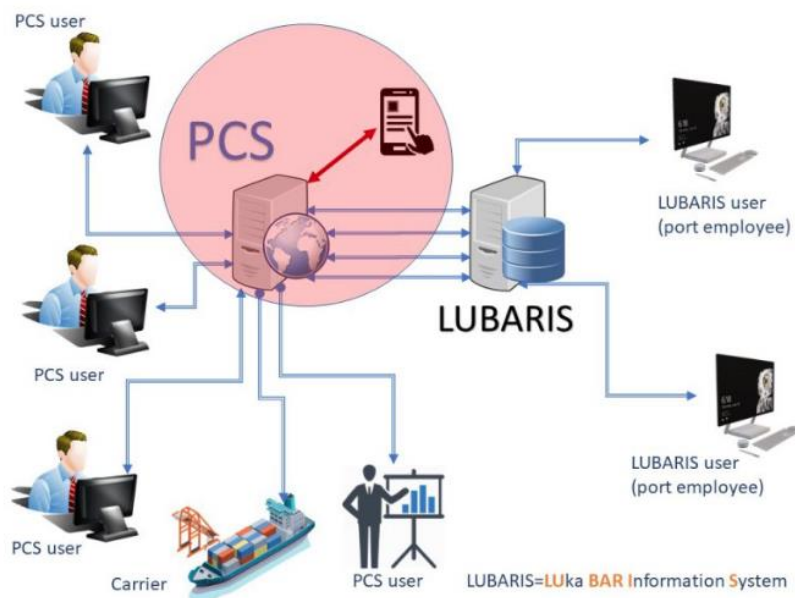


Figure 6- IT systems in the port of Bar

Through the funded project ADB Multiplatform project 2012-2014 (IPA SEE Programme), the port of Bar has equipped itself with a Port Community System (PCS) integrated with the LUBARIS system (see Figure 7), used by more Figure 7users (mainly freight forwarders, shipping agents, institutions, etc.) and was designed and developed by Actual IT doo, a DBA Group company.

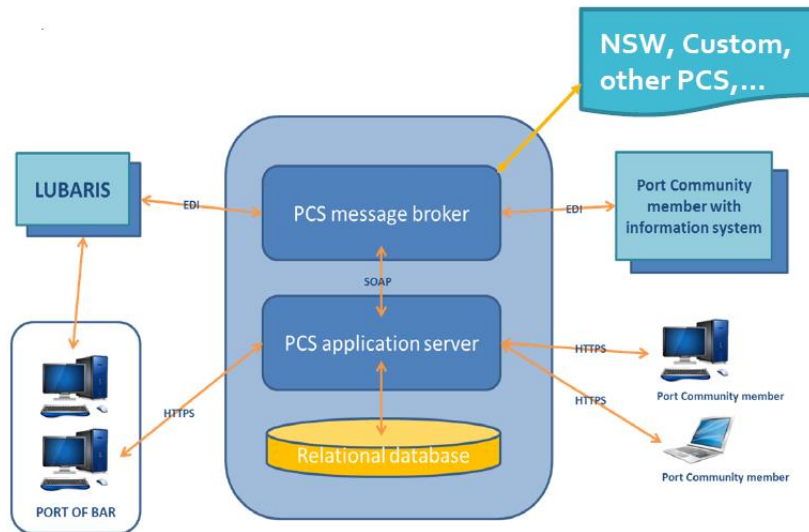


Figure 7- PCS system in the port of Bar

Bar's PCS is connected to the TOS (LUBARIS) system of Customs, freight forwarders and shipping agents and is made up of four basic components:

- Port Community System – Web module, system front end;
- Port Community System - Message Broker, for the exchange of electronic messages between the PCS and the port's ERP management system;
- Control Room (dashboard);
- Mobile application (for Android and iPhone)
- Application for the orchestration of port processes;
- RDBMS which contains the database of all systems.

The PCS system of the port of Bar has the following features:

- 1) Ship Announcement Form for electronically sending shipping announcements and mooring/unmooring requests:
  - Ship announcement
  - Ship arrival
  - Pilotage request
  - Mooring request
- 2) Management of goods through provisions (instructions) and daily orders:
  - Goods announcement
  - Announcement of work orders and operational plan

- Connection to the truck terminal
- Instructions for STRIP and STUFF of CNT containers from the Port of Adria
- Instructions for changing ownership of the goods;
- Instructions for repackaging the goods
- Customs declaration
- Change of owner of the goods
- Goods from the Port of Adria
- Instructions - Bill of lading

Luka Bar in the port of Bar handles only general cargo and containerized cargo. The PCS system does not manage the flow of passengers because they are managed directly by a private terminal of the Barska Plovidba company which operates on the passenger terminal under concession.

To bring goods into the port you need to have the goods document (dispozicija), the driver must have a valid permit, the tax must be paid, the process will be managed shortly through a software module for managing the truck announcement (VBS module – Vehicle Booking System).

Bar's PCS system was developed through the use of several European funding (see Figure 8).

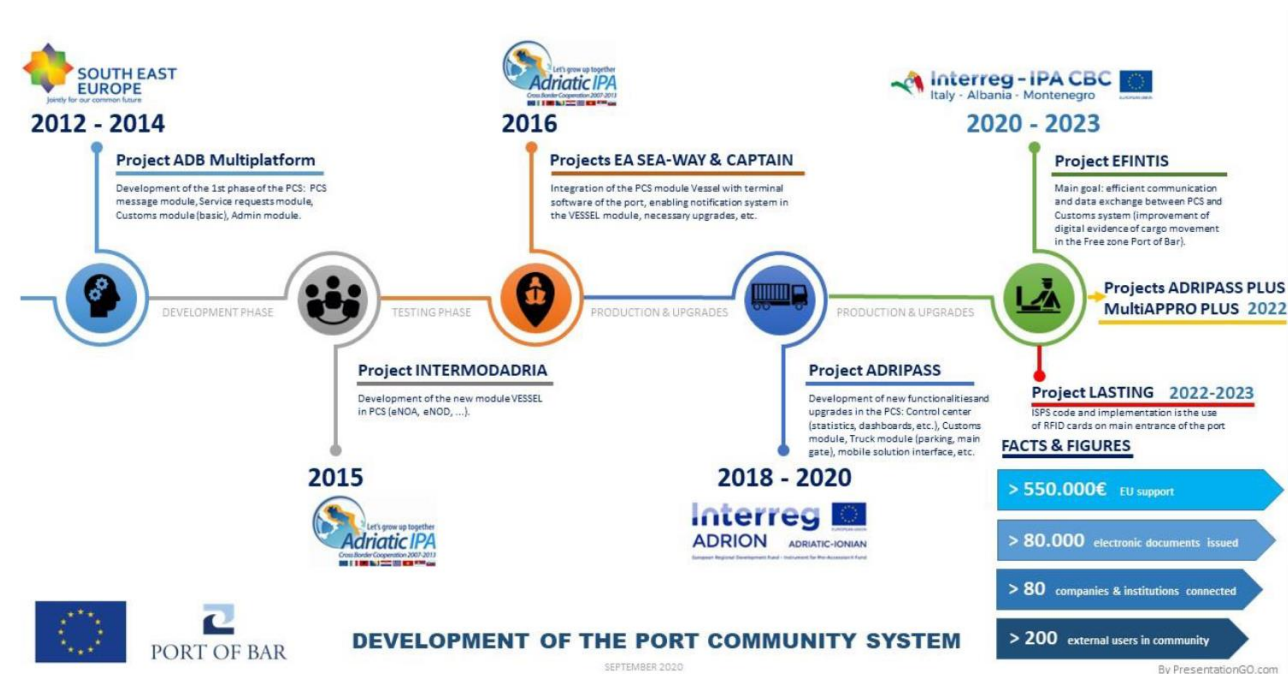


Figure 8- Development of the PCS of the port of Bar through EU funded projects

In this scenario, particular consideration must be given to what has been achieved through the recent **EFINITIS project** (Enhancing efficiency of the intermodal transport flows by improved ICT systems) financed by INTERREG IPA CBC Italy - Albania - Montenegro 2014/2020 Programme, developed in the period October 2021 – March 2023 , Action has been taken to improve the efficiency of intermodal transport flows through the improvement of ICT systems and the further digitalisation of processes, ensuring optimal communication within the port community, including better planning and optimal use of resource services available. These results have been achieved with better use of the data available in the PCS, as part of the pilot project will concern the extension of the PCS, which is related to the updates listed below:

- Connection with the Customs Administration
- Improved BI reporting
- Full integration/implementation of the Android application developed
- Basic module Dangerous goods
- Connection with NMSW
- Improved GUI

The LASTING project also adds to this scenario the functions for controlling port access, in compliance with the maritime security regulations of the ISPS Code.

## 6.2 IT systems in the port of Durres

This chapter describes the IT systems present in the port of Durres which are involved in the management of port activities and passenger traffic.

**Adriapass** project (Integrating multimodal connections in the Adriatic-Ionian) of the Adriatic-Ionian Program INTERREG VB Transnational 2014-2020, a study “Development of Pre-Investment study for implementation of a PCS system in the Port of Durres” was financed ” on the basis of which, also through the EFINITIS project, the development of the new IT system will begin.

In the meantime, the pre-investment study has set the following objectives in terms of functionality of the PCS system to be created:

- a) Define the interested parties and operators who must be served by the PCS;
- b) Define the administrative and operational procedures and the variety of services that the PCS system must provide;
- c) Establish methods to achieve enterprise-wide, inter-enterprise, and inter-governmental connectivity;



- d) Ensure interoperability with other nearby ports;
- e) Analysis of the existing IT system to interface with PCS;
- f) Definition of feature groups:
  - Ship management features
  - Functions dedicated to truck transport management
  - Functions dedicated to railway traffic management
  - Integration features
  - Merchandise management functionality
  - Billing and administration features
  - Statistical and reporting features
- g) Define other PCS-type features as:
  - Vehicle entry permits;
  - Message integration and history (monitoring and control, exact timing) and notification utilities (SMS, email, etc.);
  - Statistics and reports (customs, dangerous goods, ship reports, support for various formats);
  - Storage (finite scenarios: service orders, ship announcements, truck operations);
  - Billing and administration (maintenance of user accounts, groups, security access, agents, customers, ships, vehicles, rail, trucks, location tables);
  - Message attachments (scanned documents, specifications, damages, reports, images...).

The expected benefits from PCS system development are:

- A single source of information, integrated and standardized platform to meet the needs of all members of the port community;
- Provide adequate, accurate and timely information;
- Accelerates the response times of interested parties to their customers;
- Improve the efficiency of tracking and tracing;
- Provide shipment/service visibility;
- Generate alerts about delays or problems;
- Allow the transition to similar procedures in all communities;
- Provide opportunities for redesign and adoption of best practices;
- Easily accessible and safe;
- Easy to learn, use and support;

- Reduce the use of paper documents and forms;
- Automation of workflows and business processes;
- Greater data security through access management;
- Greater transparency;
- Better quality of information;

Through the **project EFINTIS** (Enhancing efficiency of the intermodal transport flows by improved ICT systems) financed by INTERREG IPA CBC Italy - Albania - Montenegro 2014/2020 Program in the period 2021 – 2023, a first phase of the PCS system was developed.

The specific activities of the EFINTIS project concerned the definition of all the necessary requirements for the implementation of an Information System for the Port Community of the Port of Durres in order to increase the speed of communication, the organizational interaction of the port community, have transparency in decision-making processes and strengthening of institutional "memory". Establishment of a Port Community System, as an information system for the management of port logistics operations with open possibilities of fully electronic connection with terminal operations management systems (TOS) and with national systems with single maritime windows (NMSW);

The main objectives of the EFINTIS project for the port of Durres included:

- Design the stakeholders and affected members who will be served by PCS.
- Define the administrative and operational procedures and the variety of services that the PCS system will provide.
- Establish ways to connect enterprise-wide, enterprise-to-enterprise, and cross-government.
- Ensure interaction with other neighboring ports.
- Analysis of existing IT systems that will be interfaced with PCS.
- Development of a basic module of the PCS system.

The PCS system currently has the following modules:

- Basic PCS module (users, records, etc.)
- Ship Base Module
- Basic Cargo Module

The prospect involves further developing the PCS "Basic" project by completing it with further modules and making it compliant with EU directives (2010/65), adding new modules, for example, for managing the truck announcement.

The PCS system of the port of Durres is accessible at the following link (see Figure 9):

<https://pcs-dpa.portline.eu/home>

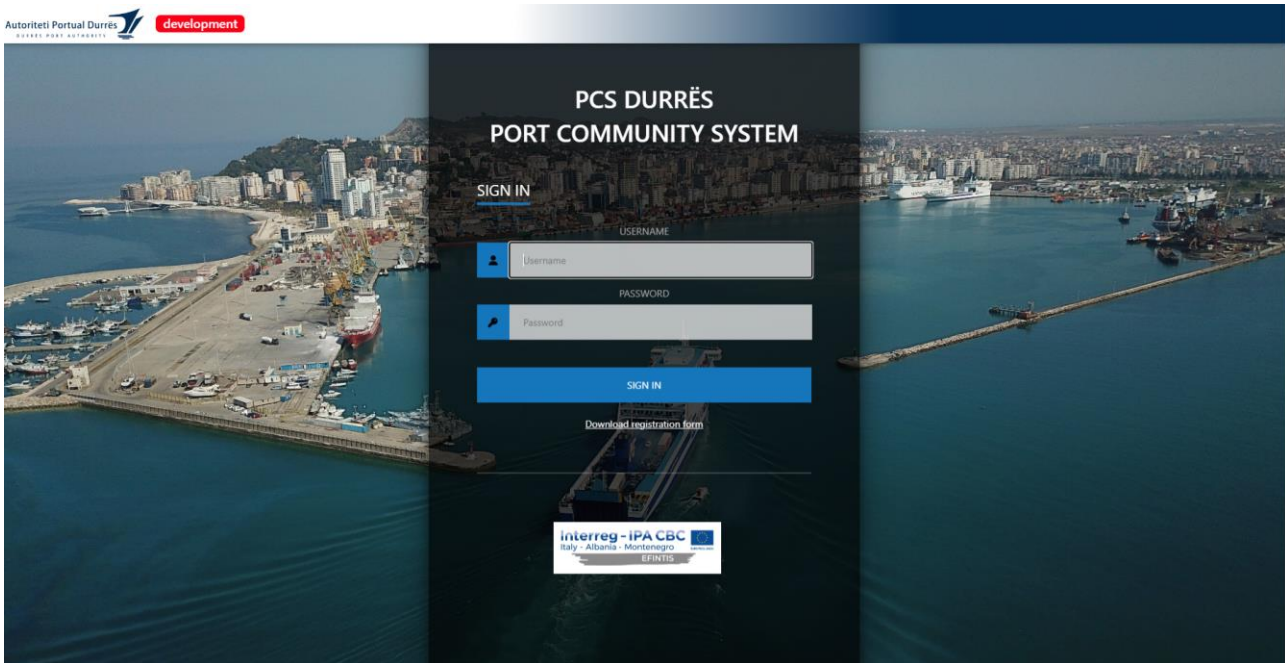


Figure 9- Port of Durres PCS portal

### 6.3 IT systems in the port of Bari

This chapter describes the state of the art of the IT systems present in the port of Bari which manage passenger traffic in disembarkation and embarkation activities to and from destinations in the Schengen area and outside the Schengen area (as is the case of the ports of Bar and Durres ).

#### 6.3.1 PCS GAIA

The port of Bari has been equipped with a PCS system called GAIA since 2011: **GAIA** is the multi-port Port Community System created by the Bari Port Authority as a support tool for port activities in the ports of Bari, Barletta, Manfredonia, Monopoli, Brindisi and Termoli used since 2011 in the implementation of "maritime security" measures (ISPS Code, SOLAS 2 of Ministerial Decree 154/2009. This is a web portal freely accessible from any PC connected to the internet at the following address <https://gaia.adspmam.it> (see **Errore. L'origine riferimento non è stata trovata.**).

The system was created as part of the **GAIA** (Generalized Automatic exchange of port Information Area) project, included within the European Territorial Cooperation Program (ETCP) Greece-Italy 2007-2013, a computerization program launched in 2008, with funds of EU Programs - INTERREG III Greece-Italy, Italy-Albania and Trans-Adriatic. Lead Partner of the project was the Levante Port Authority, with the role of

managing and coordinating the activities of the entire project, as well as the relationships between the various project partners. Thanks to participation in numerous funded projects, the Port Authority has over the years developed and capitalized numerous integrated software functions and applications, with the aim of computerising, facilitating and improving the main processes characterizing port activities, such as cargo and passenger control, procedures boarding, access to port areas, data exchange with the systems of public and private entities operating in the port and with the other Port Authorities themselves.



Figure 10- PCS GAIA Portal Port of Bari

The system is used in the management of the ticketing and boarding phases on ferries departing from the port of Bari through the issuing of **Security Cards**, and the monitoring and control of the flow of passengers and vehicles passing through the Port Security and Port Facilities gates, both for travel to the Schengen and non-Schengen areas. In moments of intense traffic, PCS GAIA managed up to 30,000 security cards between passengers and vehicles and over 10,000 authorizations daily, monitoring over 100,000 daily accesses to security and facility gates, all without causing delays for the agencies' operations or for security checks.

The Development and Technological Innovation Department, in concert with the Port Operation Departments of the Institution, carries out execution management activities, checks functionality and ensures operational support to users through a Help Desk service operating 24/7 for 365 days/year.

To define the processes to be managed and support the analysis phases, there is a permanent table of public institutions present in the port area. The table establishes the rules for using the data which, although made available to the various users, remain the property of the Maritime Authority in relation to those relating to the management of control processes for security purposes.

The system allows the provision of autonomous services at the level of a single port area (Bari, Brindisi, Manfredonia, Barletta, Monopoli and Termoli), while maintaining the unitary structure both in terms of database management and maintenance and evolution. The system serves over 2,000 users (April 2020), classified as follows:

- Public bodies: 130 users
- Police/Security Forces: 220 users
- Shipping and Port Operators: 500 users
- Logistics: 1150 users

The PCS GAIA system is accessible via HTTPS communication protocol. All the information contained, with particular reference to sensitive information, is treated according to principles of correctness, lawfulness, transparency and protection of current legislation (pursuant to article 13 of Legislative Decree no. 196/2003), as well as which are protected by an internal encryption system. Accesses and operations carried out via the system are constantly tracked and historicized, both at software and network level, through the use of ad-hoc software. The system is equipped with passive protection devices such as Proxies, Firewalls, etc. to guarantee the inviolability of the archives.

The servers and network equipment of the GAIA system are hosted in the data center of the Banchina Massi offices in the port of Bari. The data center was designed to guarantee the maximum possible continuity of service (365 days a year, 24 hours a day); the technological and safety systems were designed and built in redundant mode and equipped with great power and reliability.

Electrical continuity in the data center in the event of a blackout, for example, is guaranteed by the use of UPS (Uninterruptible Power Supply) groups and buffer batteries which provide an operational autonomy at

full load and operating speed of no less than the 60 minutes necessary to allow the restoration of ordinary supply or shutdown of services safely. There are also emergency facilities for the technical maintenance personnel of the technological systems which guarantee constant monitoring. A further qualifying element is the high level of logical-physical security adopted in the data center.

### 6.3.2 GAIA-PASS form

**PASS module** used by the Port Authority of Bari to issue the Vehicle Pass for vehicles accessing the port is active in the GAIA PCS . Port access passes are physical cards. To request access authorizations, the user must exclusively use the MAM AdSP extranet called GAIA.

During the request phase, the entity (port company, freight forwarder, concessionaire, etc.) in whose interest the security area must be accessed must be indicated. Said person, who will have been previously authorized by the competent Operations Department to be a user of the platform, will have to issue the parking permit on the request, without which the authorization cannot be issued.

To access the security gate you must present a copy of the authorization received, or show it via smartphone/tablet or communicate to the gate operator the unique 18-digit code that is printed under the barcode. The Gate Operator has the right to carry out all the further checks provided for in the Port Security Plan as well as requesting the presentation of the identity document.

The check on the authorization issued by the PASS system can be carried out not only with the handheld device supplied for control at the gates, but also by manually entering the identifier present under the barcode, enclosed in brackets.

This identifier is made up of 18 characters, and based on the first character of the code it is possible to distinguish the type of authorization issued:

- 0 – Permanent authorization
- 1 – Temporary authorization
- 2 – Temporary authorization on/off

The authorization period issued by the PASS system indicates the period of validity of the Authorization and there are also all the gates through which the vehicle and the person can pass.



Figure 11- Access authorization in the port of Bari (example)

### 6.3.3 GAIA-GATE module

Since 2011, the PCS GAIA system has been operational in the port of Bari, the **GATE module** aimed at controlling access to the Port Security and Port Facilities gates as well as for the control of passengers and vehicles departing on ferries through the issuing of Security **Cards** issued by Maritime Agencies.

The GATE module allows the management and real-time tracking of passengers and means of transport that pass through port gates for destinations both in the Schengen and non-Schengen areas.

The security card today constitutes the digitalisation of the check-in of ferry passengers and is issued by the GAIA-GATE system after reading the validity of the ticket during the check-in phase. This is an operational extension of the pre-existing port access control system, from which it is possible to supervise the ticketing phases and the ferry boarding process, as well as authorizing the access of people and vehicles to the Port Security gates and of Port Facilities. An operational dashboard to support the Gate Managers allows you to

know exactly the number of passengers and vehicles, divided by type, waiting to board or having passed through. Furthermore, the Port Authority and Border Police visualize in real time the population of the lists of passengers who have passed through the gates and are destined to board each ship.

The embarkation process of the GAIA-GATE system begins with the insertion, by the Maritime Authority (CDP of Bari), of the berth programming of the Ro-Pax and Ro-Ro ships departing from the Port of Bari. The information entered from the CDP concern: AIS Code, Ship Name, Departure Time (ATD), Line, PAX (max. number of passengers that can be carried on board defined in the ship's safety certificate), Docking Quay, State. Through the PAX value it is possible to verify that the number of security cards issued does not exceed the maximum number of passengers allowed on board the ship (and therefore to avoid overbooking).

Once the insertion of the berths has been completed, the Bari CDP, as well as the other Public Security Authorities (Border Police), can use the read-only system both to monitor boarding operations in real time and to carry out ex post checks on passengers or vehicles on board. For this purpose, the **ALERT module is also present on the system** which allows the identification and reporting of "reported" passengers or vehicles both during check-in at maritime agencies and during transit at port gates.

The data of the passengers or vehicles for which the Security Card is issued are entered into the shipping company's system, following a **check-in operation** carried out by the shipping agency, which deals with issuing tickets and carrying out check-in (this last operation can only be carried out if the status of the ship indicates pre-boarding open). Check-in can only be carried out on the day of departure and uses Web Service connections with the shipping company which updates the GATE system information every 5 seconds.

Starting from the Check-In opening phase, operated by the Maritime Authority, the Maritime Agencies can issue the Security Cards by issuing the ticket (travel document) on the systems of the respective Maritime Companies. Once the ticket has been issued, the Maritime Company systems communicate the passenger and vehicle data to the GAIA-GATE system via web service.

During the communication phase between Compagnia Marittima and GAIA-GATE, the latter automatically creates the Security Cards by linking them to the unique code of the passenger and vehicle and effectively connecting them to the barcode/QR code present on the Company's travel document. With this new procedure the manual operation of printing and delivery of the security card which was carried out by the Maritime Agency is eliminated.

The **Security Card** contains information on the passenger/vehicle (ticket number, ship, date and time of printing, type of vehicle, license plate, gate closing time for non-Schengen routes, etc.) and is equipped with



a barcode for control , in order to allow the recognition of passengers and means of transport through security gates.

However, shipping agencies have the possibility of issuing and printing manual Security Cards in the event of a malfunction of the ticketing system of their shipping company or in the event of exceptions in the issuing of the virtual Security Card.

The boarding procedure involves passing through an access gate to the port ( **Port Security** ) for the control of vehicles only and a subsequent access gate to the docks for the control of vehicles and passengers ( **Port Facility** ).

The control at the gates takes place by reading the barcodes of the security cards using PDAs connected via wi-fi. Through the GAIA-GATE system, it is possible to receive warnings on the PDAs (e.g. car passed twice, car at the wrong gate, etc.) and activate the appropriate procedures. In this way, the Bari Port Authority and the public security authorities involved control boarding and access to the boarding area (both for passengers and port operators). If a passenger or vehicle needs to exit the gate, staff have the option of putting the security card on stand-by. Standby security cards will be expected. In this way, the passenger will be able to return and go through the security check again, without losing the right of access (this mechanism ensures that the number of security cards sent to the gate does not increase compared to those issued). In any case, the ship can leave even if there are passengers with security cards waiting.

The **Security Card** , an instrument provided for by the Security Plan approved pursuant to the ISPS Code, is functional for carrying out security checks upon entry of passengers and vehicles into the Port Facilities. For this reason, the Security Card is presented at the gate directly by the interested party also in order to allow the operator to carry out any further checks.

At the security gate there is also a fixed station, through which it is possible to monitor, on the GAIA-GATE system, the security cards issued, transmitted and expected, and other information on departure, passengers and vehicles. Through the operations carried out by Security staff on the GAIA system, the Port Authority and Border Police can view in real-time the population of the lists of those passing through the gates and destined for boarding of each ship.

Up to a moment before the ship's departure, the Agency can revoke security cards that have not yet passed through the gate, for passengers who decide not to board; therefore, passengers or vehicles may show up at the gate whose Security Card will be "REVOKED".

After the status update on the departed ship, an email is sent to the port authority operators to indicate information on the departure (number of vehicles, type of vehicles, etc.). For one hour from this point, the agency can still revoke the security cards of people who have not departed; the same must be carried out at the gate for all passengers and vehicles that have no longer left.

An hour after departure, checks are carried out on people and vehicles who did not show up at the gates or were not checked by the staff in charge to carry out revocations or official registrations.

The **virtual security card** today represents the digitalisation of ferry passenger check-in. The security card associated with the ticket is read at the port security gates before accessing the port facilities. For access to the ship, the on-board staff checks the ticket/documents. The security card at the security gate is verified by reading the ticket code issued by the shipping line.

The advantages obtained through the development of the virtual security card are the following:

#### Times

- Maritime agencies - The process of issuing the security card leads to a saving of time for check-in operations at the agency, quantifiable as approximately 15 seconds per passenger;
- Shipping companies - During peak summer periods there are no longer delays in the departure of ships due to problems with issuing security cards;

#### Costs

- Maritime agencies - Lower cost of personnel responsible for issuing travel documents;
- AdSP MAM - Significant reduction in costs for printer maintenance and security card procurement costs, calculable at approximately €20,000/year;

#### Controls

- Maritime Authority - Elimination of the risk of boarding passengers in possession of a security card and not a travel document from the Company, the list of passengers and vehicles on board must be the same as the list of passengers and vehicles passing through the gates;
- Maritime Authority – There is no risk of exceeding the maximum number of passengers on board (Safety Protocol).

o Public Security Authority - Simplification in the process of identifying the passengers and vehicles involved, as it would be easier to trace the travel document (ticket) of the shipping company;

#### 6.3.4 Protection of personal data

The processing of data stored by the system takes place in compliance with the new European Regulation on the Protection of Personal Data (GDPR, General Data Protection Regulation, n.679/2016).

The AdSP-MAM processes personal data exclusively for the purpose of pursuing the organisation's own objectives, as provided for by law 84/94 and subsequent amendments, for the issuing of authorizations and the provision of services to support traffic in the ports of Bari, Brindisi, Manfredonia, Barletta, Monopoli and Termoli. The processing of personal data is also carried out in implementation of the "maritime security" measures (ISPS Code, SOLAS Port Security and Port Facilities Security plans, identified by art. 2 of Ministerial Decree 154/2009).

The AdSP-MAM also processes the personal data of subjects not registered in the system, but provided by third parties for the provision of the requested services, with the same methods referred to in the previous point. The processing is carried out directly by duly trained AdSP MAM employees and the data is kept in the organisation's Data Centers. The data is not communicated to third parties but used exclusively for the management of the authorization and control processes of the Institution and the institutional entities responsible for controls in the port area. The data is not transferred elsewhere.

The data is updated periodically to guarantee its correctness and is kept as long as its use is useful for the purpose of providing the requested services. The interested party has the right to request access to his data, their rectification, their cancellation, as well as their portability at any time; the interested party also has the right to withdraw consent to data processing at any time. The processing takes place according to principles of correctness, lawfulness, transparency and protection in compliance with current legislation. The data are collected exclusively for the purposes reported in point 1 and are processed in such a way as to guarantee high security standards thanks also to the use of encryption systems both for accessing the data via the web and for saving them on database systems. The data is processed with automated and non-automated tools; storage in electronic form takes place on secure servers located in controlled access areas within the Authority's Data Centers. Specific security measures are observed to prevent data loss, illicit or incorrect use and unauthorized access.

The GATE module provides three different types of access authorisation:

1. PERMANENT AUTHORIZATION

- It has a valid start date but does not expire
- The holder can pass through the associated gates more than once

2. TEMPORARY AUTHORIZATION

- It has a start date and an expiry date
- The holder can pass through the associated gates more than once

### 3. PROVISIONAL AUTHORIZATION (on/off)

- It has a start date and an expiry date
- The holder can pass through each associated gate only once; then, the authorization is automatically revoked by the system

Authorizations will be issued by the **PFSO** (Port Facility Security Officer). The Port Authority of Manfredonia has the possibility of issuing authorizations independently, using the same decision-making process underlying the functionality. Both the Port Authority and the PFSO can proceed with the revocation of an authorization already issued.

The authorizations issued are archived in the GAIA system. The "authorization" coupon, in addition to directly readable textual information, contains a barcode which exclusively shows a unique code for interfacing with the access control system.

The port gate where the use of the control system will initially be started is the one at the root of the Alti Fondali Basin pier where there is an unarmed security guard (GPG). Access to the security gate in question is permitted only and exclusively to personnel and vehicles in possession of authorization. Police personnel and vehicles and those who intervene in emergency situations to protect public and private safety are not subject to checks.

Checks at the gate are carried out with the PDAs supplied with the GPG present at the gate which are connected via Wi-Fi to the GAIA system. By reading the barcode with the handheld device, the GAIA GATE system will check, in real time, the type of authorisation, the gate, the start and end of validity, the number of accesses or the verification whether an authorization has been Revoked.

#### 6.3.5 CRIO portal

In 2011 the Italian Ministry of the Interior financed the **CRIO project** (Ex **Change** of Info **R** mation in Adr **I** atic **P** O rts), within which the Bari Port Authority developed a system in which even today the Port Authority of Durres can consult to obtain summary information on ferries arriving in its port, and in particular:

- Personal data of the ship departing from Bari to Durres (Ship Name, IMO, ATD, etc.);
- Number of passengers on board (without personal details such as Name, Surname, document ID, etc.);
- Number of vehicles on board (cars, trucks).

The CRIO portal is a portal accessible from the web at <https://crio.adspmam.it>

The CRIO portal could display web services through which the port of Durres could both consult the departures from Bari and write the data relating to departures from Durres to Bari, but this service is not active because there are no problems regarding the privacy of the information : in fact, since the port of Durres is a non-Schengen destination, due to the GDPR legislation that Italy must respect, it is not yet possible to exchange data with detailed information on passengers to create a fast corridor.

Figure 12- CRIO system access portal

### 6.3.6 Entry Exit System

With "REGULATION (EU) 2017/2226 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 30 November 2017 establishing an entry/exit system for the registration of entry and exit data and data relating to the refusal of third-country nationals who cross the external borders of the Member States and which determines the conditions of access to the entry/exit system for law enforcement purposes and which modifies the Convention implementing the Schengen Agreement and Regulations (EC) no. 767/2008 and (EU) n. 1077/201" establishes the creation of the new EES system (Entry Exit System).

With the launch of the new EES system (it is expected to be at the end of 2024/beginning of 2025) a passenger, once he has obtained the Ticket and checked in at the port and received the boarding passes, the passenger will proceed towards the gate of the port facility next to the embarkation where the EES system will be present. At the gate there will be a kiosk to register your personal data, scan your passport, carry out facial recognition, both for departure and arrival from non-Schengen areas.

the EES system will work in support of the SIF, Border Information System, and will serve to advance data and documents to the Police system.

The EES system is part of the public security network, managed by the State Police, and interfaces with the European node (Interpol), it has nothing to do with maritime security and therefore will not interface with the PCS GAIA-GATE system. The AdSP-MAM is only called upon to verify that the passenger can board the ship (therefore whether he has a ticket and whether the number of passengers expected to board the ship is at most the maximum allowed by the navigability certificates).

For embarkation and disembarkation procedures to and from destinations in the ports of Bar and Durres, with the introduction of the EES system in addition to the security procedures currently managed through the PCS GAIA-GATE system, new activities will therefore be added for the passenger which will make inevitably the disembarkation and embarkation process is more complicated.

## 7 Development of pilot systems

As part of the T2.1 activity of the LASTING project, technological solutions were developed for the smart integration of processes in the lower Adriatic ports of Bar, Durres and Bari.

In the ports of Bar and Durres, solutions have been developed that enable the "Smart Corridor" concept for the development and management of port access permits and the automated management of the passenger embarkation/disembarkation process at the terminal. This concept has been applied in numerous ports around the world where the word "SMART" is understood as an acronym for "Security, Mobility, Automated, Real-time Transit".

The objective achieved was to allow all passengers and port operators to benefit, through the use of new technological systems, from a reduction in transit and access times in the port, thanks to the reduction of queues and bottlenecks.

The technological systems developed in the various ports in accordance with the project objectives are described in greater detail below.

### 7.1 Port of Bar pilot system

Luka Bar of the port of Bar, as part of WP T2, activity A.T2.1., has implemented a pilot system, to support the implementation of a port smart corridor system, the adaptation of its operational processes to the requirements of maritime security dictated by the ISPS Code (International Ship Port Security) through the installation of RFID equipment and barriers at the Port Security gate and the development of a software module of the Port Community system for the control of incoming and outgoing flows, to and from the port, through the use of electronic cards read by radio identification systems (RFID).

As part of the LASTING project, the port of Bar has developed a **pilot system for access control in the port**, in compliance with the maritime security regulations of the ISPS Code **and**, installing RFID card reading devices at the **entrance gate issued to each person who must enter the port (on foot or with their own vehicle)**.

The software that manages the system was developed by the DBA Group company Actual IT.

The access control system is able to record all entrances/exits to/from the port (passengers, truck drivers, workers, guests, etc.). The use of RFID card is mandatory. The RFID card must be registered in the PCS system of the port of Bar to allow access to the port.

There are two types of RFID cards, the long-term ones, printed with the photo and data of the person for whom they are issued, and the temporary “blank” ones (without name and photo) which must be returned upon leaving the port.

The issuing of long-term (annual) RFID badges takes place in the permit office at the Luka Bar headquarters where they are printed and issued by the operators. Temporary (blank) truck driver badges are issued at the truck park. Temporary badges (blank) are issued for visiting people by the permit office in Luka Bar.

Pedestrians do not have to book their entry into the port while vehicles do.

The registry of all the people who work in the port (POB employees, port operators, etc.) is managed by the Špica Time&Space access control system.

Temporary RFID badges are returned upon exit from the port and returned to the Port Security Officer.

The software that manages port access permits is made up of a permits and announcements module developed in the PCS system integrated with the Špica Time&Space access management software

The gate hardware systems were supplied by the Podgorica-based company Špica International doo.

The PCS system currently does not exchange data or messages with the ports of Durres and Bari.

Bar's PCS, in addition to the “Ship Announcement Module for electronically sending shipping announcements and mooring/unmooring requests and “Management of goods through provisions (instructions) and daily orders”, also has a VBS module ( Vehicle Booking System) for booking port access which will go into production shortly.

At the link "[Lasting project \(Interreg IPA CBC Italy-Albania-Montenegro\) - Port of Bar pilot project - YouTube](#)" you can also find a video describing the activities and context of the project.

For further information you can consult the project document “ **D.T2.1.1 – Software and related equipment for the smart corridor at Port of Bar** ”.

#### 7.1.1 Pilot system hardware

As part of the project, the necessary hardware was purchased to create and read permits and regulate access with RFID equipment (RFID card programmers, readers, barriers, etc.), which were then integrated with the PCS system .

Below are some images with the gate components created in the project.





Figure 13- Port Security gate in the port of Bar



Figure 14- Port of Bar port security gate



*Figure 15- Pedestrian gate at the security gate in the port of Bar*

### 7.1.2 Functionality of the port of Bar pilot system

The access management system in the port of Bar allows you to record the details of people/vehicles entering/exiting the area of the Free Zone of the Port of Bar, thus being able to know who and how many people are in the area port at any time. This mainly includes employees of Port Bar JSC, employees of other companies operating in the free zone, freight forwarders, agents, employees of state institutions carrying out their activities in this zone, truck drivers, etc.

The software features developed are the following:

- it is possible to enter different types of permits for people (daily, for a limited period, permits that allow access to restricted areas, etc.)
- Various reserved areas can be defined (only one is currently active) accessible with the appropriate permit;
- records/keeps track of people who enter/exit the Free Zone on foot, regardless of the type of permit they hold;
- registers truck drivers and any companions entering/exiting the Free Zone area
- registers car drivers and their companions entering/exiting the Free Zone, regardless of the type of permits they possess
- provides security officers with detailed information on the data of people registered when entering/exiting the Free Zone.

- creates reports through which it is possible to obtain information on the current presence of a person in the Free Zone area or in a restricted zone, on the presence of a person in the Free Zone area or in a restricted zone in a certain period, reports on all stays of a certain person in a certain period in the area of the free zone or certain restricted zones, etc.
- it is designed for the exchange of data with the software for managing the presence of Port of Bar employees;
- integrates data from the Port of Adria gate (truck/entry/exit data, etc.);
- optimizes management in the Truck module of the already existing PCS in accordance with the new requirements arising from the registers of people in the Luka Bar free zone area;
- Integration of all new features with PCS software.

## 7.2 Pilot system in the port of Durres

As part of the implementation of security policies according to the ISPS (International Ship and Port Security) regulations, in 2011 security and control systems were installed both at the port entrance and during transit in the passenger boarding areas. These systems provide an integrated and secure solution by providing a protected area, ensuring the detection of license plates, the entry and exit of passengers in the port, the creation of controlled passages and the recording of data relating to passengers and vehicles navigating in the port of Durres. The electronic transit system is integrated with the e-Boarding electronic check-in system, through which each passenger and vehicle is provided with the completion card which accompanies the passenger/vehicle transit process in all phases (boarding, verification ) until boarding at your destination. The electronic Check-in system communicates in real time with the systems of the transport agencies operating in the port of Durres. After 12 years of use it became necessary to update and improve them with additional features.

In 2022 APD became a partner of the LASTING project “Lower Adriatic-Passenger Integrated Mobility System (LA-PIMS)”, where one of the main objectives of this project was to create a strategic plan for the transnational passenger system for the Authorities of Transport in the Lower Adriatic region to act as a collaborative platform between public and private entities, improving multimodal connectivity and improving transport efficiency and ease of use.

APD of the port of Durres, as part of WP T2 activity A.T2.2., has developed a pilot system of the LASTING project, to support the implementation of a port smart corridor system, for the improvement of the Check - in system **in electronics for passengers** through the development of software for controlling

incoming/outgoing passenger flows through the use of electronic cards read by radio identification systems (RFID).

The pilot system made it possible to improve the permit management system and the exchange of information on passengers, creating:

(1) The exchange of information with maritime agencies dealing with passengers for the maritime lines between Durres, Ancona and Bari. This information is automatically transferred every hour from the agencies to the Port Entry System.

(2) The process for issuing daily and long-term permits has been improved and the following have been implemented:

- Centralized administration and unique identification of companies. Now, for each company in the new system, folders have been created, the information has been standardized, the VAT NUMBER data has been updated and the system has been connected to the Tax System to verify the validity of the VAT NUMBER.
- Centralized administration and unique identification of individuals. Now each individual (pedestrian) is provided with a folder. The information collected is standardized.

(3) The automatic link of the income reporting generated by the new Permit System with the new tax and electronic invoice process has been carried out. The income generated is now reported in real time to the Tax Office.

(4) The connection of the access control system with the permit and ticketing system.

(5) The project also includes the creation of structures for verifying permits (vehicles, pedestrians and passengers) via Mobile Devices (PDA). Each authorization check is performed in real time and the results of the check leave a trace on the PDA and also in the Permit System.

(6) The announcement report at the Port of Bari for the movement of passengers and vehicles was created. The reporting was designed on the basis of an Excel table, aggregated according to the categorization of vehicles and passengers based on trips (agency).

(7) The connection of the Permit System with the Port's Global Reporting System, Oracle BI Analytics has been built and the permit issuing activity (issuance, deadlines, collections, in value and volume, etc.) is followed automatically by the system.

The creation of the reports is operational starting from December 2022, while the exchange with the agencies was activated from April 2023, and the multi-year permits from July.

The following aspects remain to be improved:

- a) Receipt of reports from the Port of Bari – The technical aspect of this report has not been finalized. It is estimated that the first version is in the form of Automatic Email Reporting, but it is requested that the reporting can be improved in tabular form, equal to or close to the reports built for the port of Bari.
- b) Verification of the correctness of the categorizations and folders created for companies and private individuals who have an active permit in the port.

At the link [Lasting | Durres Port Authority - YouTube](#) there is also a video describing the activities and context of the project.

For further information you can consult the project document “ **D.T2.2.1 – Software and related equipment for the smart corridor at Port of Durres** ”.

### 7.3 Pilot system in the port of Bari

The ADSP-MAM of the port of Bari, as part of the WP T2 activity A.T2.3., carried out a study on the flows of passengers arriving/departing from the port of Bari from the corresponding ports of Bar and Durres, beyond the analysis of the specifications required by the ISPS Code and evaluated the software architecture for the future development of a "smart corridor" between the ports of the lower Adriatic (Bari, Bar and Durres) for the speeding up of the embarkation and disembarkation processes of passengers.

The study on the flows of passengers arriving/departing from the port of Bari from the corresponding ports of Bar and Durres is found in this same document in Chapter 4.

The in-depth analysis of the specifications required by the ISPS Code and the software architecture proposal for the future development of a "smart corridor" between the ports of the lower Adriatic (Bari, Bar and Durres) to speed up the boarding processes and disembarkation of passengers is described in Chapter 8.

The activation of the smart corridor system that exchanges information on passengers embarked/disembarked between the port of Bari and other cross-border ports in the non-Schengen area, such as the ports of Bar and Durres, although technically feasible, is precluded by the fact that The transfer of data to countries outside the European Economic Area is fundamentally prohibited. The basic concept is simple, if our personal data are protected by European legislation which guarantees interested parties to control the use that is made of their personal data and that they can exercise a series of rights also with the help of supervisory authorities independent it is clear that once the same data are transferred to countries that do not have similar protections, the interested parties would lose those guarantees recognized by their legislator, thus nullifying the guarantees and rights recognized to them.



## 8 Architecture of the Fast Corridor

To characterize itself as a logistics hub, a modern port must increasingly tend to integrate into the distribution chain (supply chain management) which leads to the coordination of traditional corporate functions, typically carried out within each company, with all the other members up to the user final which, often, is also the one that triggered the production process.

In order not to constitute a bottleneck, the port must become an advanced interlocutor that exchanges information with the outside world, contributing to giving value, with its own activity, to the achievement of the overall objective which is to satisfy the need to dispose of an asset from someone even thousands of kilometers away.

A similar reasoning can be made for the passenger who travels for work, for holiday, for necessity and who must be able to find a modern interaction with every place he passes through and therefore also with the port.

These reasons alone are sufficient to understand how essential it is for a port to increasingly become a place for the production and management of information to be exchanged with the subjects who use it or to be made available to passengers who transit there also in connection with other ports between which the trips take place.

### 8.1 Smart Corridor

**Smart Corridor** " concept for the development and management of solutions for customs clearance and passport control. This concept has been applied in numerous ports and airports around the world where the word "**SMART**" is understood as an acronym for "Security, Mobility, Automated, Real-time Transit".

The "smart corridor" is defined as a multimodal transport corridor connecting infrastructure and logistics facilities, between two or more countries, used to transport intra-regional and international goods and passengers enabled by the latest technological and financial trade facilitation tools and policies favorable; the corridor includes innovative technological solutions of Intelligent Transport Systems (ITS) aimed at facilitating trade through the simplification of transport administrative processes and providing real-time information to interested stakeholders to monitor customs clearance and movement of goods and passengers.

The goals of smart runners are:

- a) Increase the use of real-time transportation data and statistical information to optimize the use of corridor resources and infrastructure;

- b) Improve and facilitate trade and transport:
- c) Simplify and harmonize cross-border administrative procedures and documentation:
  - i. Implementing automated paperless administrative procedures;
  - ii. Reduce goods transport times and costs;
- d) Increase the safety and security of transport services;
- e) Simplify trade while increasing the efficiency of customs controls and other authorities;
- f) Facilitate the opening of landlocked countries to intra-regional and international trade;
- g) Improve the competitiveness of the corridor countries.

## 8.2 Fast Corridor

The Fast corridor concept for the management of passenger embarkation and disembarkation processes refers to the general characteristics described for the "smart corridor" (see par. 8.1 8.1).

As part of the LASTING project, the creation of a "Fast corridor" can be achieved by putting the port "PCS - Port Community System" systems in communication with each other, each of which constitutes in itself a unique computerized port environment that is concerned with managing the events that occur through the joint action of the various private and institutional actors who operate there, transforming them into data and as such valorising them and making them available to all those who can benefit from them for their own use.

The smart corridor system must then be "third party", in order to ensure maximum certainty of confidentiality in data management, necessary to safeguard the private commercial activities that take place there and respect the right to privacy of passengers and operators.

Furthermore, the smart corridor system must be "integrated", to make the PCS systems communicate with each other without overlapping or burdening the processes.

Finally, the fast corridor system must be "scalable" to adapt to the specificities of individual ports while guaranteeing the creation of shared standards that allow the uniqueness of port processes to be preserved, simplifying them as much as possible and making the circulation of goods effective and rapid, vehicles and people within the ports and between the ports themselves.

## 8.3 Fast Corridor Architecture Specifications

This chapter proposes an architecture specification for the development of a Fast Corridor which, looking at the general vision of smart corridors, refers to best practices and recent projects developed at EU level to establish in particular a *federated network of transport operators and logistics across Europe, enabling the*



*sharing of information and services needed to optimize the TEN-T corridors from an economic, environmental and social perspective .*

We refer in particular to the **FENIX** project (European Federated Network of Information eXchange in LogistiX) recently concluded in 2023, which developed the first European federated architecture for data sharing at the service of the European logistics community for ports, shippers, suppliers of logistics services, mobility infrastructure providers, cities and authorities in order to offer interoperability between any existing and future individual IT platforms.

Co-financed by the European Commission through the CEF program (Connecting Europe Facility), on 11 "pilot" activities in 9 corridors of the TEN-T network, it saw the participation of Italy, coordinated by the Ministry of Sustainable Infrastructure and Mobility.

For more information on the FENIX project you can consult the following link: [Fenix Network – European Federated Network of Information eXchange in LogistiX \(fenix-network.eu\)](https://fenix-network.eu)

The project developed a federated network of transport actors at European level and demonstrated its functioning, feasibility and benefits in accordance with the recommendations of the Digital Transport and Logistic Forum (DTLF). DTLF, is a European Commission expert group that brings together public and private stakeholders from various transport and logistics communities to support the European Commission in promoting the digital transformation of the transport and logistics sector ( Digital Transport and Logistics Forum ( [DTLF](https://europa.eu) ) ([europa.eu](https://europa.eu)) ).

The DTLF was established by DG MOVE and places its policy context in the following context of the European Commission's initiatives and policies:

- Transport White Paper, 2011;
- Digital Single Market Strategy, 2015;
- ICT standardization priorities for the digital single market, 2016;
- eGovernment Action Plan, 2016-2020;
- European Framework Strategy for Interoperability, 2017;
- Resolutions of the European Parliament, January and May 2017;
- Tallinn Digital Transport Days, November 2017;
- Conclusions on the digitalisation of transport, EU Council of Ministers, December 2017;

- Commission Decision C (2018) 5921 of 13 September 2018;
- Horizontal rules on the establishment and functioning of Commission expert groups C (2016) 3301 of 30 June 2016.

The DTLF recommended that since the logistics sector is highly fragmented and composed of a wide range of SMEs, public institutions should take the initiative to promote the creation of the logistics federation platform. This DTLF recommendation is the foundation of the FENIX project.

The DTLF establishes the goal of using data sharing as a “commodity”, based on the following principles:

- Plug and Play: each end user can connect to their own platform and the federation platform provides the required services.
- Technology-independent infrastructure services: The services provided by the platform is technology-independent.
- Trusted, Safe and Secure: The federated platform should be trusted, safe and secure accessible only by authorized users. Furthermore, data integrity is adequately guaranteed.
- Federation: network of peer to peer platforms and solutions. The federation unites different platforms, which are able to use interconnected services and share data.

FENIX is based on cloud technology that promotes greater cross-collaboration, optimized and dynamic routing of freight and passenger transport. The final objective was to provide a set of integrated services that exploit Big Data acquired in real time to increase awareness and visibility in real time directly usable from cloud services.

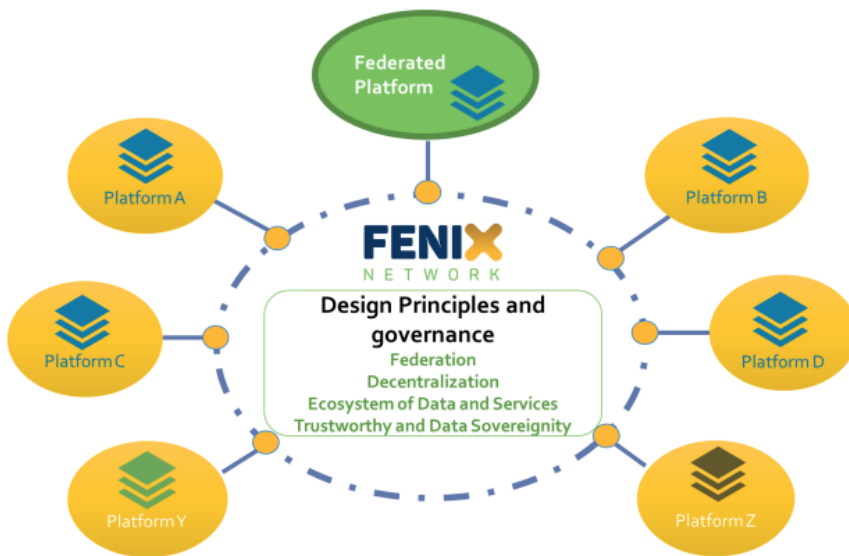


Figure 16- FENIX project federation architecture

The federation of platforms is achieved through the implementation of connectors and FENIX connector implementations, which will provide the necessary identification, validation, discovery and communication mechanisms to ensure a secure exchange of information in a trusted environment.

Federated services have been implemented following the 3 pillars that adapt to business processes based on:

- Federated Identity Registry – to ensure the identity of federation participants, identity authentication.
- Federated Data Exchange Services – data exchange connector to enable data sharing.
- Broker: search and discovery service for a distributed catalog of services and data available in each node of the federation.

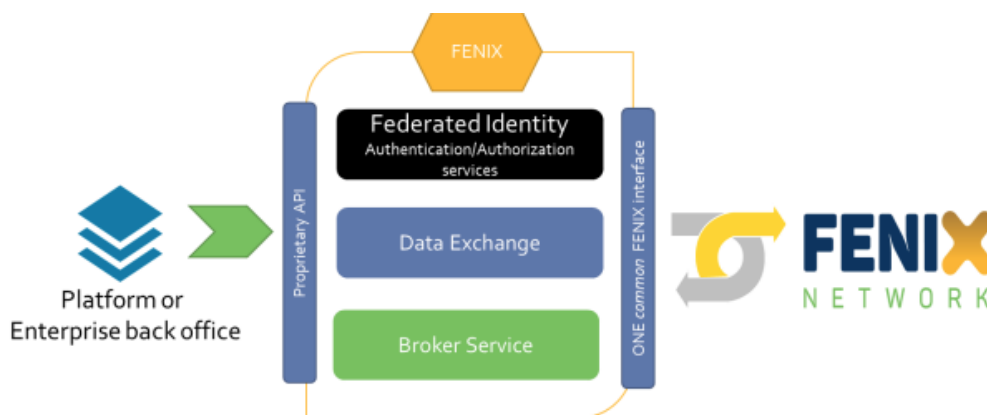


Figure 17- Architecture of the FENIX project connector

These three main functional blocks are surrounded by two interfaces, a common FENIX interface that must be deployed following FENIX requirements and a proprietary API with which the platform interacts. The FENIX interface is the communication point between the FENIX connectors and the federation enabler. The implementation of each connector is unique to each platform and must be implemented by the platform vendor.

The architectural specifications of the fast corridor model that is proposed to be adopted within the LASTING project therefore refer to what is specified in the FENIX project and in particular to what is reported in the project deliverable which can be downloaded from the page dedicated to project deliverables Deliverables – Fenix [Network \(fenix-network.eu\)](https://fenix-network.eu) and, in particular, at the following link: <https://fenix-network.eu/wp-content/uploads/2020/07/FENIX-Deliverable-D3.1-final.pdf>

The PCS systems used in the ports of the LASTING project of Bar, Durres and Bari were developed with technologies designed to be interoperable with each other. The use of a federated systems architecture such as that proposed by the FENIX project represents an architectural solution for exchanging information and data between them.

## 9 Evaluation of results

The general evaluation of the results obtained through the development of the pilot systems in the ports of Bar and Durres has led to clear benefits with respect to the general objective of increasing coordination between stakeholders by promoting sustainable cross-border connections in the area of cooperation.

The "smart" integration process of the International Ports of the Lower Adriatic was carried out with the cooperation between the 5 project partners, with the aim of harmonizing systems, procedures and software necessary to facilitate and speed up the process of embarkation and disembarkation in the ports international markets in the Lower Adriatic, aiming to remove bottlenecks and reduce transit times.

We describe below the results and benefits obtained by the ports of Bar, Durres and Bari in the development of pilot systems

### 9.1 Results for the port of Bar

Through the use of this system, Luka Bar has improved the efficiency and safety of its transport services and the competitiveness of the port by implementing the necessary international standards of the ISPS Code.

Furthermore, the pilot action allowed regional coordination and rationalization of passenger flows within the lower Adriatic area considering the fact that the port of Bar is the main port of Montenegro and the country is one of the most important hubs intermodal.

The Port of Bar, as a partner of the project, intends to increase the demand for a higher level of security in the port area. Improving digital information flows and reducing administrative burdens is vital to ensuring an efficient transport network.

In addition to the adoption of innovative equipment, the technical coordination and the integration of the new software with pre-existing IT systems, the port of Bar has managed to achieve an important requirement to allow adaptation to the standard dictated by the ISPS code for international security of ships and port infrastructure.

The main result of the pilot action is that today all port visitors (be they passengers, workers, truck drivers, guests, etc.) entering or leaving the port are automatically registered at the port PCS system gate using an RFID card.

### 9.2 Results for the port of Durres

From the LASTING project, the Port Authority of Durres (APD) benefited from an enhancement of the already existing electronic control system for the access of passengers and vehicles to the ferry terminal.

The improvement consisted in particular of the following components:

- 1) Improvement of the current permit management system for the issuing, activation and renewal of permits as well as online reporting at the port of Bari.
- 2) Integrations with other applications and systems such as:
  - Passenger/vehicle booking system,
  - Tax system,
  - Reporting system,
  - Pedestrian management system,
  - Vehicle management system.
- 3) Development of functionality for the online request for port access permits.
- 4) Purchase of identification scanners and handheld devices for port entry control.
- 5) Training and support

All the components foreseen by the project have been successfully implemented eliminating the main gaps we had with existing systems by fixing and solving problems with:

- Automatic exchange of information with the port of Bar regarding the data of passengers/vehicles traveling from the port of Durres to the port of Bar.
- Integration of the electronic check-in system with the APD authorization system to guarantee access to the APD entrance gates on cruise visit days.
- Workflow improvements in the short-term and long-term permit granting system in the APD.
- Improved security controls for issued permissions by enabling portability. Control via a mobile application.

The successful implementation of the Action Plan contributed to the improvement of the quality of service to passengers and the increase of control and security in the Port Authority of Durres.

### 9.3 Results for the port of Bari

The MAM AdSP coordinated the project activities of the pilot systems of Bar and Durres by carrying out the analysis of passenger flows between the project ports (see chapter 5) and proposing a system architecture for the implementation of a fast corridor between the project ports in line with the best practices developed in the projects promoted by the EU Commission in order to create a possible system for sharing the data and information necessary to speed up passenger transport between ports (see chapter 8).

As part of the LASTING project, the creation of a "Fast corridor" can be achieved by putting the port "PCS - Port Community System" systems in communication with each other, each of which constitutes in itself a unique computerized port environment that is concerned with managing the events that occur through the joint action of the various private and institutional actors who operate there, transforming them into data and as such valorising them and making them available to all those who can benefit from them for their own use.

The specific system architecture that was proposed for the LASTING project (see chapter 8 **FENIX (European Federated Network of Information eXchange in LogistiX)** project concluded recently in 2023, which developed the first European federated architecture for data sharing serving the European logistics community for ports, shippers, logistics service providers, mobility infrastructure providers, cities and authorities in order to offer interoperability between any existing and future individual IT platforms.

The PCS systems used in the ports of the LASTING project of Bar, Durres and Bari were developed with technologies designed to be interoperable with each other. The use of a federated systems architecture such as that proposed by the FENIX project represents an architectural solution for exchanging information and data between them.

However, the **CRIO portal is currently operational in the port of Bari** (see paragraph 6.3.5) which allows the Port Authority of Durres to consult today to obtain summary information on ferries arriving in its port. The CRIO portal could also display web services through which the port of Durres could both consult departures from Bari and write data relating to departures from Durres to Bari, but this service is not yet active due to information privacy problems which would be exchanged: in fact, since the port of Durres is a non-Schengen destination, due to the GDPR legislation that Italy must respect, it is not yet possible to exchange data with detailed information on passengers in support of the fast corridor.

#### 9.4 Critical aspects

Despite the availability of the technology necessary for the future creation of a single architecture for the exchange of data between the ports of Bar, Durres and Bari, important issues still remain to be addressed which currently limit the very possibility of exchanging data between these ports, in particular with regard to the **regulatory limits imposed by the GDPR regulation** . Overcoming these limits involves a possible adaptation of the laws and regulations of the countries of Montenegro and Albania to the rules established by the European GDPR.

Furthermore, with the introduction of the **EES system** (see paragraph 6.3.6) at the entry/exit points of the European community such as the port of Bari, in addition to the security procedures currently managed

through the PCS GAIA-GATE system, there will be added new activities for passengers which will inevitably make the process of disembarking and embarking towards destinations in the ports of Bar and Durres more complicated as they are ports in non-Schengen areas.

#### 9.4.1 GDPR

One of the aspects most carefully followed by experts in the data protection sector, entrepreneurs, scholars, jurists is the topic of data transfer to countries not belonging to the EU or, better yet, not adhering to the European Economic Area (as are the ports of Bar and Durres), or towards international organizations.

The basic concept is simple, if personal data are protected by European legislation which guarantees interested parties to control the use that is made of their personal data and that they can exercise a series of rights also with the help of independent supervisory authorities it is clear that once the same data are transferred to countries that do not have similar protections, the interested parties would lose those guarantees recognized by their legislator, thus nullifying the guarantees and rights recognized to them.

This is why the GDPR, as well as the previous directive from 1995, allows the transfer only under certain conditions, in the absence of which this is prohibited. Let's think, for example, of situations where in third countries there are laws or practices that allow police forces to access electronic correspondence or telephone, biometric or location data without any prior authorization from the judiciary, without any prior authorization from the judiciary, without any protection the possibility for interested parties to have the opportunity to exercise their rights.

The activation of the smart corridor system that exchanges information on passengers embarked/disembarked between the port of Bari and other cross-border ports in the non-Schengen area, such as the ports of Bar and Durres, is therefore precluded, although technically feasible. by the fact that the transfer of data to countries not belonging to the European Economic Area is currently prohibited by the GDPR regulation.

European legislation thus provides for the possibility of transferring data to third countries under certain conditions: first of all in the event of an "adequacy" decision by the European Commission which is recognized in those countries that ensure an adequate level of protection which in the jurisprudence of the Court of Justice ( Case 362/14 of 6 October 2015 so-called Schrems I) does not mean an identical level of protection but "essentially equivalent" to that ensured within the European Union.

To reach this decision, the Commission takes into consideration various elements, including the legal framework, the rule of law, respect for human rights and fundamental freedoms, relevant legislation,



including in matters of public safety, defense and security. national law, criminal law, data protection rules, the existence of independent supervisory authorities to ensure and enforce data protection rules. There are already several countries that have requested and obtained recognition of "adequacy" just to mention the most important ones: Argentina, Canada, Israel, New Zealand, Uruguay and lastly Japan and South Korea.

The GDPR has also introduced "new" tools useful to facilitate the transfer. Among these are the Standard Contractual Clauses which must be adopted by a national authority and which then, with approval by the European Commission, will have general validity as they are able to guarantee consistency. Further innovation is given by the code of conduct which, once approved, will have general validity within the Union and which can also be respected and used by data controllers or processors not subject to the GDPR. Thus the scope of application of the CoC as a transfer tool could allow a controller or processor in a third country to provide adequate safeguards, in particular for sector-specific transfers. In this regard, on 22 February the European Committee approved the Guidelines on codes of conduct as tools for transfers.

Another new tool is the certification mechanism as a transfer tool which aims to provide adequate guarantees for the processing of personal data. Also for this instrument, the European Committee has started work to provide guidelines on certification as a tool for transfers. To codes and certifications must be added binding and enforceable commitments thanks to which data controllers and data processors are required to undertake commitments, through contractual instruments or other legally binding instruments useful for adding the appropriate guarantees provided for by the code with regard to the rights of the subjects.

In this context, it is also important to mention the provisions to be included in administrative agreements between public entities in different countries which include executive and effective rights of the interested party. This represents a legally binding and enforceable instrument between public bodies and requires the need for authorization from the competent authority on the transferring public body and the need for an opinion from the European Committee to always guarantee its consistency.

The role of the authority will instead be to evaluate the level of protection offered in practice by the transfer tool and intervene where necessary by prohibiting the transfer. In this context, the European Data Protection Board has sought to provide assistance to data controllers, data processors and industry operators.

There were various initiatives provided thanks to the work of the various authorities present in the Committee, including the Italian Guarantor. The FAQs on the consequences of the provision for data controllers and processors were developed in the aftermath of the Schrems II decision (July 2020), and Recommendations 1/2020 were then issued to assist controllers and processors mainly in case assessment

case of the circumstances of the transfer and their duty to identify and implement effective additional measures to ensure a substantially equivalent level of protection in the event of data transfers to third countries, has also issued recommendations on supplementary measures and guidelines on codes of conduct such as transfer tool.

These documents contain useful suggestions for data controllers and exporters if there is no adequacy decision. These, in fact, are the main "responsible" in identifying the most appropriate protections for the transfer that is intended to be carried out and must verify, case by case, also depending on the transfer instrument chosen, whether the law or practice of the third country prejudices the effectiveness of the appropriate safeguards contained in the GDPR and, if necessary, must implement additional measures. This entire evaluation must be carefully documented.

There are also useful indications for third country importers: collaborate with the exporter to allow the evaluation of the specific legislation in the third country; implement the guarantees contained in the transfer instrument of the relevant additional measures and provide information to the exporter in case he is unable to comply with the commitments.