Interreg Co-funded by the European Union

Italy – Croatia

MILEPORT

Action plan for improving the last mile accessibility of Adriatic ports through ICT.

Topic 1: transport flow management and vehicle booking systems

Deliverable no. D.1.2.3

Table of contents

Introduction

Activity 1.2 is devoted to jointly developing a joint Action plan for improving the last mile accessibility of Adriatic ports through ICT, focusing on transport flow management and vehicle booking systems.

Through this document, drafted by LP-Port of Trieste, PP3-Port of Ravenna, PP6-Port of Rijeka, and PP8-Port of Ploče jointly break down the goals of the cross-border Strategy for improving the last mile accessibility of Adriatic ports through ICT (deliverable D.1.1.2) in an action plan for optimising last mile accessibility of Adriatic ports by improving port/terminal gates and entry/exit IT tools and procedures, with specific tasks for each PP, KPIs, time line, financial resources needed.

1. Executive summary

With the growing of traffic volumes and of the need of seamless logistic corridors coordination along the supply chain is more and more crucial for the attractiveness of the Adriatic ports. At the same time, ports are facing the challenge of environmental sustainability with the need to ensure a lower level of emissions and a sensible reduction of the use of fossil fuels. Therefore, the reduction of the level of congestion on the road network and at the same time the decrease of the level of pollution and greenhouse gasses are two objectives that every port must reach as soon as possible. The improvement of the ICT system supporting the logistic processes is the emerging solution to allow an increase in traffic using the current infrastructures and more effective coordination of the processes. All participating partners in Topic 1 "Transport flow management and vehicle booking systems" are affected by long queues both inside and outside the terminal area, slowing down all daily operative activities and making unpredictable the times and unreliable the operative plans. This causes a significant extension of the waiting times for the trucks, raising the costs and the CO2 emissions. The Topic 1 group concluded that with the help of ICT tools, the congestions can be reduced, the management of the terminal area can be optimized, and the time spent at the terminal can be significantly decreased so the transport flow can be more effective, reliable, and sustainable.

Each partner port plays a distinct yet interconnected role in the Adriatic maritime corridor, highlighting the importance of a unified approach to last-mile accessibility.
The North Adriatic Sea Port Authority, with its strategic position and advanced intermodal facilities, serves as a critical gateway for international trade, emphasizing the need for enhanced IT systems to manage growing traffic volumes.
The Port Network Authority of the Eastern Adriatic Sea focuses on integrating its IT infrastructure to streamline operations and improve environmental sustainability, ensuring efficient cargo handling and reduced emissions.
The Central Adriatic Ports Authority and the Southern Adriatic Sea Port Authority underscore the importance of port community systems (PCS) and advanced traffic management solutions.
The Port of Rijeka Authority stands out for its significant investments in modernizing port infrastructure and enhancing intermodal connectivity. By implementing advanced ICT solutions like the PCS and integrating with European transport networks, Rijeka aims to become a leading logistics hub in the northern Adriatic.
The Port of Zadar Authority focuses on upgrading its port management systems to improve data exchange, streamline operations, and support regional economic development.
The Port of Ploče Authority, a crucial transit hub for Bosnia and Herzegovina, exemplifies the strategic importance of ICT in facilitating seamless port operations. With its commitment to environmental sustainability and modernization of port infrastructure, Ploče aims to enhance its role in the European transport network, supporting both regional and international trade.

The strategy outlined within the MILEPORT project "Strategy for improving last mile accessibility of Adriatic ports through ICT" (D.1.1.2) involves the objectives and the priorities that must be achieved to improve the ICT system of the nodes involved in Topic 1 as well as some means of verification to be tested in the pilot action. This document includes the action plan to improve the accessibility of Adriatic ports using ICT tools. Each partner involved in Topic 1 (Transport flow management and vehicle booking systems), after the involvement of stakeholders, has jointly developed the Action Plan despite each action plan can be different at each partner. However, all the action plans were concentrated on the improvement of the accessibility of Adriatic ports through ICT with a focus on the improvement and enhancement of the transport flow management with the help of ICT development.

After this phase, the Topic 1 partners will implement a pilot action focused on the improvement of the existing ICT system ore the adoption of new solutions to ease the transport flow management with the main target to reduce the inefficiencies affecting the intermodal chain and improve the sustainability of Adriatic ports. The use of IT solutions will permit a significative decrease of idle times, allowing faster connections to the terminals. In this way, the ports will attract more traffic. Therefore, the development of these pilot actions will produce several benefits like the decrease of the congestions on the road network, the reduction of physical documents and of manual checks at the gates and a significant drop of the pollution.

Based on the Strategy for improving the last mile accessibility of Adriatic ports through ICT (deliverable D.1.1.2), all project partners have jointly designed the Action Plan.

2. The strategy

The strategic goals that the partners of Topic 1 want to achieve in the domain of improving the last mile accessibility through IT tools are defined as follows:

The LP, Port of Trieste

The strategic goals PNAEAS wants to achieve in the domain of improving the last mile accessibility through IT tools are defined as follows:

Medium term (5 years):

- topic no. 1 (VBS)
  - Goal no. 1 - Pre-exit notification
  - Goal no. 2 - Slot management system
  - Goal no. 3 - Laser scanners at gates

Long term (10 years):

- topic no. 1 (VBS)
  - Goal no. 4 – e-CMR

Within the first strategic goal, LP wants to improve the last mile accessibility developing a new PCS procedure allowing to track the exit of vehicles (from disembarkation to gate-out), simplify the operation at the gate and the associated customs procedures.

Goal n. 2 refers to a new PCS procedure/module capable to allow the carrier to present himself at the unloading terminal to collect the container, within a previously defined time window. The container to be collected must therefore be unrestricted and the PCS module must interface with the other modules used to control the goods in the container and, in particular, with the "unloading fees" module already in use.

Installing sensors (Goal no. 3 - Laser scanners at gates) at the gates will allow to differentiate port access policies according to the type of cargo (container or semitrailer), eliminating bottlenecks at the port gates, thus improving the port-city interface at the same time its environmental impact. The information gathered by the sensors, will be useful to validate the positive effects of previous action developed and steer future improvement of ICTs tools as to further enhance the last mile accessibility of Adriatic Ports.

Finally, A new PCS procedure is foreseen to manage the data contained in the electronic CMR (electronic consignment note) and associate them with the data already present in the other Sinfomar modules, with the possibility of exchanging them with the Custom Agency and the Finance Police through software interoperability.

These actions will reduce the time spent at terminals' gates and reduce the related environmental impact, at the same time improving the last mile accessibility.

The PP3, Port of Ravenna

The strategic goals Port of Ravenna Authority wants to achieve in the domain of improving the last mile accessibility through IT tools are defined as follows:

Medium term (5 years):

- topic no. 1 (VBS)
  - Goal no. 1- implement a vehicle booking system for the port
  - Goal no. 2 - develop a mobile app supporting the VBS as well as other services helpful for the truck drivers.

Long term (10 years):

- topic no. 1 (VBS)
  - Goal no. 3 – Buffer areas management system

The goals will be reached through the upgrade of the existing PCS by the realization of a new Vehicle Booking System module. These improvements will permit to speed up the access of heavy vehicles to the terminal gates, anticipating controls on customs clearance, delivery order and availability of the goods, and reducing the congestions and the inefficiencies at the terminal. In fact, the digitalization of several operative activities allows relevant time savings as well as a reduction of the costs. The new mobile app will be the way to establish a bidirectional communication between port and drivers and the dematerialization of transport documents will improve the reliability and effectiveness of transport of goods.

The PP6, Port of Rijeka

The strategic goals Port of Rijeka Authority wants to achieve in the domain of improving the last mile accessibility through IT tools are defined as follows:

Medium term (5 years):

- topic no. 1 (VBS)
  - Goal no. 1 - Developing a mobile application for Android and iOS platforms

Long term (10 years):

- topic no. 1 (VBS)
  - Goal no. 2 - Synergy of VBS and artificial intelligence

The PP8, Port of Ploče

The strategic goals Port of Ploče Authority wants to achieve in the domain of improving the last mile accessibility through IT tools are defined as follows:
Medium term (5 years):

- Goal no. 1 (Vehicle Booking Systems as integrated part of the PCS system which handle pre-arrival or pre-exit notification to enhance exchange of the information to port/terminal gates
- Goal no. 2 (Port/terminal gates with enhanced interoperability based on the message exchange among public PCS and private IT systems)
- Goal no. 3 (Standardization of the message exchange among public PCS and private IT systems through ESB or API)

The goals will be reached through the upgrade activities of the existing PCS system Truck announcement module and upgrade of enterprise service bus which is used for message exchange between the systems. Upgrade of the PCS system will have impact on the Control access system which already exchange messages with PCS system regarding the trucks. Message exchange is done through API interfaces, container interfaces through the enterprise service bus. Data exchange in form of messages will happen through enterprise service bus as prerequisite for integration of the PCS system with TOS systems which exists in port of Ploče area. New features and improvements will speed up the access of vehicles at the main port gates, anticipating security and transport clearance, delivery order and availability of the goods, and reducing the congestions and the inefficiencies at the port terminal and the digitalization of activities which allows relevant time savings as well as a reduction of the costs. Message exchange will happen based on integration between PC S system and other TOS systems which exist at ports. This will establish automated communication between the port terminals and truck drivers and the dematerialization of transport documents will improve the reliability and effectiveness of transport of goods.

3. Identification of the actions

3.1. Mapping the actions

This chapter outlines the actions for all involved project partners

LP-PORT OF TRIESTE

ACTION/MEASURE	ESTIMATED COST	TIME HORIZON
Pre-exit notification of trucks leaving the port of Trieste	90.000 euros	2025
Slot booking management systems of trucks directed to the port of Trieste	124.350 euros	2026
Development of a new GOS (Gate Operating System) for the port's gates	178.000 euros	2027
e-CMR IT components in the PCS	38.150 euros	2030

PP3-PORT OF RAVENNA

ACTION/MEASURE	ESTIMATED COST	TIME HORIZON
implement a vehicle booking system for the port of Ravenna	40.000 euros	2025
develop a mobile app supporting the VBS as well as other services helpful for the truck drivers	29.999 euros	2025
Buffer areas management system	120.000 euros	2030

PP6-PORT OF RIJEKA

ACTION/MEASURE	ESTIMATED COST	TIME HORIZON
Development mobile application for Android and iOS platforms	90.000 euros	2025
Synergy of VBS and artificial intelligence	120.000 euros	2030

PP8-PORT OF PLOČE

ACTION/MEASURE	ESTIMATED COST	TIME HORIZON
1. Upgrade and development of the PCS - Development of the API services to exchange data with other systems; Testing and production of the system 2. Upgrade and development of the Control access system, Analytics system - Development of the API services to exchange data with other systems. Testing and production of the system.	61.500,00 euros	2025
1. Purchase and installation of the server for the CCTV Video management system and object analytics. 2. Purchase and installation of approx. 20 smart recognition cameras with video management system licences for recognition of container codes	80.000,00 euros	2025
Purchase of the networking equipment for data exchange on terminal (wifi, IoT. Etc)	30.000,00 euros	2025

3.2. Setting the actions

This chapter details the actions for all involved project partners.

LP- PORT OF TRIESTE

Action no. 1: Pre-exit notification of trucks leaving the port of Trieste	
Description of action/measure	This activity involves the analysis and design of the IT solution to be implemented in the PCS for the digitization of the procedures for the pre-exit notification of goods, by road, from the port of Trieste. The scope is to automate the operations required to affix the visa to the trucks/goods leaving the port. The action will be developed in partnership between the Customs and Monopolies Agency (ADM) and PNAEAS, and has the following objectives: • Realization of the pre-exit notification of goods leaving the port. The pre-exit notification will be realized within the PCS "Sinfomar" with a new dedicated module and can be transmitted, through interoperability between ADM and PNAEAS, to the customs systems. The advance notice will be completed with the control of vehicles at the exit gate from the port of Trieste; • Automation of the visa to the trucks/goods leaving the port by the Finance Police (Guardia di Finanza).
Description of the main steps for its implementation	Project design Tender Software upgrade
Stakeholders involved	• PNAEAS • Maritime Authority • Border Police • Port community • Representatives of shippers and logistic operators located in peripheral areas – or their associations The first three categories of stakeholders defined are directly involved in the port entry authorization process; along with the Port Community and operators from peripheral areas, they are the direct beneficiaries of the action.

Timeline	By 2025
Investment cost	90.000 euros
Sources of financing	European and own funds
Impact of the initiative - environment	Currently, when a ship arrives and the cargo is downloaded, ITUs which continue their journey from Trieste to their destinations are loaded on trucks, building a long queue at the port gates, with ensuing air pollution and GHG emissions. The pre-exit notification will reduce such queues, and the harmful effects on the environment as well.
Impact of the initiative – accessibility of peripheral regions	The reduction of queues at the port gates positively affects the accessibility of the hinterland, since road transport is mainly used by shippers located in regional peripheral areas, whose short distances do not allow for rail transport.
KPIs	Number of pre-exit notifications

Action no. 2: Slot booking management systems of trucks directed to the port of Trieste	
Description of action/measure	The procedure for the realization of the PCS module related to the slot booking management system requires two phases: • the first phase consists in the realization of a new PCS Sinfomar module dedicated to the port terminal operators that allows to include them in the data exchange procedures within the port community; • the second phase consists in the realization in the complete slot booking system in order to optimize the traffic and to reduce the waiting time of the haulier inside the terminal in the phase of picking up the container destined to exit the terminal/port. The main objective and results will be to pass from the current pre-arrival notification on a daily basis to an hourly basis.
Description of the main steps for its implementation	Project design Tender Software upgrade
Stakeholders involved	• PNAEAS • Maritime Authority • Border Police • Port community • Representatives of shippers and logistic operators located in peripheral areas – or their associations The first three categories of stakeholders defined are directly involved in the port entry authorization process; along with the Port

	Community and operators from peripheral areas, they will all be direct beneficiaries of the action
Timeline	By 2026
Investment cost	124.350 euros
Sources of financing	European and own funds
Impact of the initiative - environment	Trucks can enter the port of Trieste only if the received a "pre-arrival notification". Yet, currently this authorisation is given on a daily basis. This means that trucks can build a long queue at the port gates, with ensuing air pollution and GHG emissions. The slot booking system will work on an hourly basis, reducing such queues, and the harmful effects on the environment as well.
Impact of the initiative – accessibility of peripheral regions	The reduction of queues at the port gates positively affects the accessibility of the hinterland, since road transport is mainly used by shippers located in regional peripheral areas, whose short distances do not allow for rail transport.
KPIs	Number of slot booking notifications

Action no. 3: Development of a new GOS (Gate Operating System) for the port's gates	
Description of action/measure	The dedicated port gate automation system must be able to detect uniquely identify transits at each vehicular and pedestrian track, and provide the relevant detected information to the Sinfomar PCS. The transits must then be associated with moving objects in the internet of things (IOT) logic, along with other information, such as, in the case of cargo, the customs status of the goods, the authorizations to enter into port areas, the transit permit, etc. The concept of a port gateway in which all processes are linked must apply regardless of the hardware and software technology or instrumentation employed. Theoretically, such a system could also function with manual data surveys and recordings. Thus, the technology component must provide operational support and better working conditions for operators. This implementation must provide an architecture that allows for maximum flexibility, so that the component dedicated to the automation of port gates can receive the data not reprocessed by the different systems (field infrastructure) and has within it the ability to create the necessary associations between the different data, and

	provide reporting, statistics and analysis activities. It is required to be designed as an open system owned and controlled by PNAEAS. These components must interface with mobile apps and other systems related to port processes, not just gate operation.
Description of the main steps for its implementation	Project design Tender Software upgrade Purchase of equipment
Stakeholders involved	• PNAEAS • Maritime Authority • Border Police • Port community • Representatives of shippers and logistic operators located in peripheral areas – or their associations The first three categories of stakeholders defined are directly involved in the port entry authorization process; along with the Port Community and operators from peripheral areas, they will all be direct beneficiaries of the action
Timeline	By 2026
Investment cost	124.350 euros
Sources of financing	European and own funds
Impact of the initiative - environment	Trucks can build a long queue at the port gates, with ensuing air pollution and GHG emissions. The new GOS will allow for an enhanced monitoring and management of inbound and outbound road flows, reducing congestion, and the harmful effects on the environment as well.
Impact of the initiative – accessibility of peripheral regions	The reduction of congestion at the port gates positively affects the accessibility of the hinterland, since road transport is mostly used by shippers located in the regional peripheral areas, short distances not allowing rail transport.
KPIs	Number of users of the new GOS

Action no. 4: e-CMR IT components in the PCS	
Description of action/measure	The objective of this activity is to implement a new interoperability component with the AIDA system (Customs Agency software) in order to include, within the pre-arrival notification, data related to the

	electronic management of CMR (e-CMR). This project will be carried out in collaboration with the Customs Agency, with which PNAEAS has already shared the aims of the activity. The expected output will be the realization of new components within the PCS (and respectively also in AIDA) and the implementation of a complete pilot, to be tested in the port of Trieste. The port of Trieste, thanks to this activity, will become the first case in which a port of call is directly involved in the activities related to the e-CMR procedure. The data to be managed concern, as defined by the data model being developed by the Customs Agency: • Shipment, Shipper, Shipment Mandate, Shipper, Seller, Consignee, Carrier, Forwarder; • Loading Place, Loading Date. Delivery, Incoterms®, Attached Documents; • Delivery grouping, Packages, Packing type; • Description of goods, Gross weight, Volume, Total packages, Total weight; • Completion and Signatures.
Description of the main steps for its implementation	Project design Tender Software upgrade
Stakeholders involved	• PNAEAS • Maritime Authority • Border Police • Port community • Representatives of shippers and logistic operators located in peripheral areas – or their associations The first three categories of stakeholders defined are directly involved in the port entry authorization process; along with the Port Community and operators from peripheral areas, they will all be direct beneficiaries of the action
Timeline	By 2030
Investment cost	38.150 euros
Sources of financing	European and own funds
Impact of the initiative - environment	The e-CMR or electronic CMR is the digital equivalent of the CMR Transport Document in paper-based format that is used and signed in 4 copies (sender, consignee, carrier and administration. Its use implies adherence to the CMR Agreement (*Contrat de Transport International de Marchandises par Route*) that regulates it.

	In its paper-based format, the CMR Transport Document brings many benefits: it harmonises contractual conditions for goods transported by road and helps facilitate goods transport overall. A global e-CMR solution would retain all these benefits, but would make the system more modern, by removing paperwork and handling costs. Some of the benefits e-CMR are: 1) Lower costs • Handling costs can be up to three to four times less expensive • Faster administration with reduced data entry, no paper handling, no fax/scan/letter exchanges, no paper archiving, etc. • Faster invoicing • Reduction of delivery and reception discrepancies 2) Greater Transparency • Data accuracy • Control and monitoring of the shipment • Real-time access to the information & proof of pick-up and delivery Because of its digital nature, e-CMR can also be easily integrated with other services used by transport companies, e.g. customs declaration or transport & fleet management services. By moving to an electronic format, the three parties involved in each shipment benefit from increased overall efficiency of logistics, resulting in increased economic competitiveness. A final benefit is greater road safety, as e-CMR can be linked to eCall, a system for trucks that automatically dials emergency services in the event of a road traffic accident. The digitalisation of the CMR entails a faster data exchange among interested parties, especially in the whole supply chain. Thanks to this, cargo bundling will be made easier, reducing the need for empty trucks on the roads, reducing air pollution and GHG emissions.
Impact of the initiative – accessibility of peripheral regions	Not only does the transport of goods between peripheral areas and the main nodes of the TEN-T networks mainly occur by road, but it is often done through almost empty vehicles and empty returns. The e-CMR will allow road haulers located in peripheral regions in the hinterland to exchange data more easily, making it easier for different cargo to be bundled.
KPIs	Number of users of the e-CMR

PP3- PORT OF RAVENNA

Action no. 1: Implement a vehicle booking system for the port of Ravenna	
Description of action/measure	This activity involves the analysis and design of the IT solution to be implemented in the PCS for the digitization of the procedures for the implementation of a vehicle booking system from the port of Ravenna. The scope is to automate the operations required to verify the withdrawability of the goods and to authorize the entry and exit from the port gates. The action will be developed in partnership between the Customs and Monopolies Agency (ADM) and has the following objectives: • Realization of the digital clearance of the goods; • Automation of the visa to the trucks/goods leaving the port by the Finance Police (Guardia di Finanza); • Automation of the engagement of the truck companies.
Description of the main steps for its implementation	Project design Formalization of software reuse Software upgrade
Stakeholders involved	• Port of Ravenna Authority • Customs Authority • Terminal operators • Freight forwarders • Shipping agents • Carriers • Truck' Companies
Timeline	By 2025
Investment cost	40.000 euros
Sources of financing	European and own funds
Impact of the initiative - environment	The vehicle booking system will reduce such queues, and the harmful effects on the environment as well.
Impact of the initiative – accessibility of peripheral regions	The reduction of queues at the terminal gates positively affects the accessibility of the hinterland, since road transport is mainly used by shippers located in regional peripheral areas, whose short distances do not allow for rail transport.
KPIs	Number of vehicle bookings

Action no. 2: Develop a mobile app supporting the VBS as well as other services helpful for the truck drivers	
Description of action/measure	This activity involves the analysis and design of the IT solution to be implemented for the development of a mobile app connected with the PCS and the new vehicle booking system with which the truck drivers can be notified in case of problems detected for the enter or exit the port. Through the App will be possible also to exchange documents related to the goods and to determine the distance of the truck from the terminal. The action has the following objectives: • Realization of the mobile app; • Automation of the notification;
Description of the main steps for its implementation	Project design Mobile App dvelepment
Stakeholders involved	• Port of Ravenna Authority • Terminal operators • Freight forwarders • Shipping agents • Carriers • Truck' Companies
Timeline	By 2025
Investment cost	20.000 euros
Sources of financing	European and own funds
Impact of the initiative - environment	The mobile app will contribute to the reduction of the time spent at gate waiting to enter as well to reduce the paper-based process
Impact of the initiative – accessibility of peripheral regions	The reduction of queues at the terminal gates and of the paper in the processes positively affects the accessibility of the hinterland, since road transport is mainly used by shippers located in regional peripheral areas, whose short distances do not allow for rail transport.
KPIs	Number of mobile app installation

Action no. 3: Develop a Buffer areas management system	
Description of action/measure	This activity involves the analysis and design of the IT solution to be implemented for the development of an application for the

	management of the buffer areas where trucks will be parked waiting their turn to enter to the terminal. The action has the following objectives: • Realization of the buffer area management system; • Automation of the queues management.
Description of the main steps for its implementation	Project design Tender System development
Stakeholders involved	• Port of Ravenna Authority • Terminal operators • Truck' Companies
Timeline	By 2030
Investment cost	120.000 euros
Sources of financing	European and own funds
Impact of the initiative - environment	The buffer area management system will reduce the queues at terminal gates and this can positively impact on the port sustainability
Impact of the initiative – accessibility of peripheral regions	The reduction of queues at the terminal gates positively affects the accessibility of the hinterland, since road transport is mainly used by shippers located in regional peripheral areas, whose short distances do not allow for rail transport.
KPIs	Number of trucks using the buffer areas

PP6-PORT OF RIJEKA

Action no. 1: - Developing a mobile application for Android and iOS platforms	
Description of action/measure	The new system will endow port users with an easier and more practical way of obtaining permits with efficient use of time and material resources, optimising transport flows in/out of the Port of Rijeka, reducing congestion at the port entrance and on the city streets leading to the port terminals.
Description of the main steps for its implementation	Project design Tender
Stakeholders involved	• Croatian Railway – Infrastructure • Port of Rijeka Plc. • AGCT Ltd.

	• Port service concessionaires • Ship owners • Ship agents • Freight agents • Truck carriers • Croatian Railway Cargo Ltd. • PPD Transport Ltd.
Timeline	**2025**
Investment cost	**90.000 eur**
Sources of financing	European and own funds
Impact of the initiative - environment	The mobile app will contribute to the reduction of the time spent at gate waiting to enter as well to reduce the paper-based process
Impact of the initiative – accessibility of peripheral regions	Speeding up internal administrative procedures and better record off data including sharing with police, harbour master and Custom
KPIs	Number of mobile app installation

Action no. 2: Synergy of VBS and artificial intelligence	
Description of action/measure	Synergy of VBS and artificial intelligence
Description of the main steps for its implementation	Project design Tender System development
Stakeholders involved	• Customs Authority, • Terminal operators, • Freight forwarders • Shipping agents, • Carriers
Timeline	**2030**
Investment cost	**120.000 eur**
Sources of financing	European and own funds
Impact of the initiative - environment	Artificial intelligence and automation are helping ports and logistics operators reduce their carbon footprint.
Impact of the initiative – accessibility of peripheral regions	Enhancing the cross-sectoral cooperation Integration of transport sector into the social and economic development of the region Improve the development and competitiveness of the Port of Rijeka as the main maritime port
KPIs	half-yearly reports on the effectiveness of the system

PP6-PORT OF PLOČE

Action no. 1: Upgrade and development of the PCS - Development of the API services to exchange data with other systems; Testing and production of the system	
Description of action/measure	**Upgrade and development of the PCS - Development of the API services to exchange data with other systems; Testing and production of the system**
Description of the main steps for its implementation	As part of the upgrade of the existing module, functionalities that belong to the domain of the PCS system will be implemented. The basis of the upgrade of the existing module will be integration with the terminal operating systems of the terminal operator Adriatic Tank Terminals in the form of an exchange of messages about vehicle (tank) announcements. This integration will serve as standard for integration with other Terminal operating systems of terminal operators. Functionalities refer to the interaction of port authority, the forwarder with terminal operator in the parts of the process that include common data, to avoid multiple entries in heterogeneous IT systems and to enable the reuse of already entered data, and to provide stakeholders with a single interface to the greatest extent possible in current situation. This primarily refers to the creation of vehicle announcements and the refinement and synchronization of their data, for the purpose of using them to create the necessary supporting documents within the PCS system, such as permits, invoices and any other necessary documents in the process that contain common data. The existing business process and its logic, which was previously implemented for the needs of the remaining port areas, remains unchanged. • Functional specifications • Tender • Development of API interface • Development of web modules • Testing • Production
Stakeholders involved	• Port Authority, • Port security, • Customs, • Port terminal operators, • Freight forwarders, • Truck companies
Timeline	2025.
Investment cost	31.500,00 EUR

Sources of financing	EU and own contribution
Impact of the initiative - environment	New features and improvements will speed up the access of vehicles at the main port gates, anticipating security and transport clearance, delivery order and availability of the goods, and reducing the congestions and the inefficiencies at the port terminal and the digitalization of activities which allows relevant time savings as well as a reduction of the costs. Message exchange will happen based on integration between PCS system and other TOS systems which exist at ports. This will establish automated communication between the port terminals and truck drivers and the dematerialization of transport documents will improve the reliability and effectiveness of transport of goods.
Impact of the initiative – accessibility of peripheral regions	Improve the development and competitiveness of the Port of Ploče as the main maritime port, Enhancing the cross-sectoral cooperation, Integration of transport sector into the social and economic development of the region
KPIs	Detention of trucks at the port entrance and port exit, processing and delivery of port warehouse documents, custom processing, Detention of trucks in port area, Entrance terminal truck processing, Type of truck and cargo monitoring and management, Time of transaction processing.

Action no. 2: Upgrade and development of the Control access system, Analytics system - Development of the API services to exchange data with other systems. Testing and production of the system.	
Description of action/measure	**Upgrade and development of the Control access system, Analytics system - Development of the API services to exchange data with other systems. Testing and production of the system.**
Description of the main steps for its implementation	As part of the upgrade of the existing module, functionalities that belong to the domain of the PCS system will be implemented. The basis of the upgrade of the existing module will be integration with the terminal operating systems of the terminal operator Adriatic Tank Terminals in the form of an exchange of messages about vehicle (tank) announcements. This integration will serve as standard for integration with other Terminal operating systems of terminal operators. Functionalities refer to the interaction of port authority, the forwarder with terminal operator in the parts of the process that include common data, to avoid multiple entries in heterogeneous IT systems and to enable the reuse of already entered data, and to provide stakeholders with a single interface to the greatest extent possible in current situation. This primarily refers to the creation of vehicle announcements and the refinement and synchronization of their data, for the purpose of using them to create the necessary supporting documents within the PCS system, such as permits, invoices and any other necessary documents in the process that contain common data. The existing business process and its logic,

	which was previously implemented for the needs of the remaining port areas, remains unchanged. • Functional specifications • Tender • Development of API interface • Development of web modules • Testing • Production
Stakeholders involved	• Port Authority, • Port security, • Customs, • Port terminal operators, • Freight forwarders, • Truck companies
Timeline	2025.
Investment cost	30.500,00 EUR
Sources of financing	EU and own contribution
Impact of the initiative - environment	New features and improvements will speed up the access of vehicles at the main port gates, anticipating security and transport clearance, delivery order and availability of the goods, and reducing the congestions and the inefficiencies at the port terminal and the digitalization of activities which allows relevant time savings as well as a reduction of the costs. Message exchange will happen based on integration between PC S system and other TOS systems which exist at ports. This will establish automated communication between the port terminals and truck drivers and the dematerialization of transport documents will improve the reliability and effectiveness of transport of goods.
Impact of the initiative – accessibility of peripheral regions	Improve the development and competitiveness of the Port of Ploce as the main maritime port, Enhancing the cross-sectoral cooperation, Integration of transport sector into the social and economic development of the region
KPIs	Detention of trucks at the port entrance and port exit, processing and delivery of port warehouse documents, custom processing, Detention of trucks in port area, Entrance terminal truck processing, Type of truck and cargo monitoring and management, Time of transaction processing, port security improvements

Action no. 3: Purchase and installation of the server for the CCTV Video management system and object analytics, Purchase and installation of approx. 20 smart recognition cameras with video management system licences for recognition of container codes, Purchase of the networking equipment for data exchange on terminal (wifi, IoT. Etc)	
Description of action/measure	• Purchase and installation of the server for the CCTV Video management system and object analytics.

	• Purchase and installation of approx. 20 smart recognition cameras with video management system licences for recognition of container codes • Purchase of the networking equipment for data exchange on terminal (wifi, IoT. Etc)
Description of the main steps for its implementation	• Functional specifications • Tender • Installation of the equipment • Integration with Enterprise service bus to exchange data to PCS • Testing • Production
Stakeholders involved	• Port Authority, • Port security, • Customs, • Port terminal operators, • Freight forwarders, • Truck companies
Timeline	2025. – 2026.
Investment cost	110.000,00 EUR
Sources of financing	EU and own contribution
Impact of the initiative - environment	New features and improvements will speed up the access of vehicles at the main port gates, anticipating security and transport clearance, delivery order and availability of the goods, and reducing the congestions and the inefficiencies at the port terminal and the digitalization of activities which allows relevant time savings as well as a reduction of the costs. With smart analytics and sensors exchange of information will happen over the installed network its enterprise service bus. Data will be exchange to PCS system which will have impact on establishing automated communication between the port terminals and truck drivers and the dematerialization of transport documents will improve the reliability and effectiveness of transport of goods.
Impact of the initiative – accessibility of peripheral regions	Improve the development and competitiveness of the Port of Ploce as the main maritime port, Enhancing the cross-sectoral cooperation, Integration of transport sector into the social and economic development of the region.
KPIs	Detention of trucks at the port entrance and port exit, processing and delivery of port warehouse documents, custom processing, Detention of trucks in port area, Entrance terminal truck processing, Type of truck and cargo monitoring and management, Time of transaction processing.

Conclusions

The participants of the topic no. 1 – "Transport flow management and vehicle booking systems" developed their action plan based on their respective strategy and vision. After all the project partners also had a meeting together, where the group members discussed the current situation, their action plans for improving the last mile accessibility of Adriatic ports through ICT, as well as the experience and feedback from each other.

The project partners concluded that the action plan is in line with the vision and strategies, they have phrased earlier.

The vision of LP is: "To steer the development of the port community by promoting technological innovation and boosting digital growth to improve the last mile accessibility of Adriatic ports through IT tools."

Vision of PP3 is: "Implement an IT system that help to achieve the following objectives:

- Receiving in advance the data of drivers and arriving vehicles;
- Request for access and verification of pre-authorisation for access of people to the dock issued by AdSP, (also through the use of a smartphone application)
- Receive in advance information on the arrival of external personnel and/or vehicles at the terminal;
- Changes to the access roads to the port, to facilitate the entry and exit of vehicles;
- Possibility of sending communications to the drivers of arriving vehicles through a device / smartphone application in case of delays / emergencies / information on traffic flows and roads;

Use rest and parking areas outside the port area, to be reported in advance to the drivers."

Vision of PP6: "To achieve an enhanced level of multimodality through the development of superior infrastructure, advanced ICT solutions, and a high degree of collaboration across all segments of the multimodal transportation chain"

Vision of PP8: "To achieve an enhanced level of multimodality through the development of superior port infrastructure, advanced ICT solutions in addition to the application of modern technologies, and a high degree of collaboration across all segments of the multimodal transportation chain."

As at each port one of the main problems is the huge trucks waiting time, before entering and even before leaving. This can put the ports to competitive disadvantage, as the waiting time makes it more difficult to reach these areas by truck on the day of loading. The waiting time has also negative effect on the environment, due to the CO2 emission during trucks' queueing. This waiting time can be considerably lowered with the help of ICT development for better transport flows and Vehicle Booking Systems.

Although the four participating parties are using different IT platforms and management systems and they are in different development status of using VBS systems, by sharing the respective actions the involved PPs have identified several synergies.

With the help of these synergies and best practice sharing, the four participating partners can reach a common platform where further developments could be harmonised and potentially upgraded simultaneously.