

# DigLogs

## Transferability plan

Activity title: 5.4 Transferability plan

### 5.4.3 Performance Assessment Results

<b>Responsible partner:</b>			
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## 1. Introduction

DigLogs aims to create the technological solutions, models and plans to establish the most advanced digitalized logistic processes for multimodal freight transport and passengers' services in the Italy-Croatia area. This project will have a significant impact on the quality, safety and environmental sustainability.

Transferability plan accounts for the possibility of transferring the knowledge and the know-how gained through the process of implementation of the project's work plan. Sheer amount of the practicality gained with the tried-out solutions bridges the gap among the project partners who are in front of the decision-making process of advancement to the next level of their own business conduct.

While there is plenty of information available on different solutions in ports regarding the digitalization of logistic processes used in many cities across the Croatian-Italian border, in most EU studies less attention is given to the methodological approach for the successful transfer of these measures. In the real world, what can be observed is the implementation of measures usually imported from elsewhere, where they were part of a successful case, often without a careful assessment of whether transferability conditions are ensured, and thus ending up as failures.

For this scope, transferability is defined as **“the ability to transfer/adopt in a given city/port successful measures previously adopted elsewhere, and achieve comparable results”**

The exercise of transferability is all about looking properly at the enablers (success drivers) and the conditioning barriers affecting the adoption of measures. For this, it is necessary to systematize what barriers to policy implementation exist in each target case.

The aim is thus to undertake an assessment of transferability and finally propose a framework supporting the adoption of digital logistic processes in new settings. It will assess whether port logistic measures adopted in the reviewed stock of experience (both in the pilots and as synthesized at the EU level in previous projects) are actually transferable and under what specific conditions.

## 2. Brief pilot descriptions

In the following subchapters, a brief description of all Diglogs pilot actions will be presented, as follows:

- Pilot 1: WMS 4.0 – Dry Port Case Study (PP2 - Elevante)
- Pilot 2: PCS automation – Deliveries Planning (PP5 - Actual, PP6 – Polo Inoltra)
- Pilot 3: Mobile Safety/Security (PP4 - UNITS)
- Pilot 4: Application for Data Flows Management (PP7 – Port of Rijeka Authority)
- Pilot 5: Innovative solution for Access Control (PP8 – Port of Šibenik Authority)
- Pilot 6: M2M Dialogue (PP9 – Port of Rovinj Authority)
- Pilot 7: Spatial Data Management System (PP1 - CFLI)

A more detailed description can be found in Deliverable 5.4.2 Data Collection, and in the respective Pilot Work Plans.

## 2.1. Pilot 1 description - WMS 4.0 – Dry Port Case Study

WMS 4.0 is the Pilot Action carried on by Elevante in the framework of Diglogs Project, which will take place in the intermodal rail-road terminal of Gorizia (SDAG), Friuli Venezia Giulia Region, Italy with the following aims:

- to demonstrate how multimodal transport arrangements among a heterogeneous set of logistics operators including carriers, logistic providers, transport operators and authorities can be thoroughly and conveniently optimised by exchanging real-time information concerning planned delivery schedules; and
- to overcome existing transport challenges affecting the very last mile of the multimodal transport chain by making the execution of road transport activities from the destination railroad terminal in Gorizia (SDAG), Friuli Venezia Giulia Region, Italy to the final goods delivery destinations in the most efficient, convenient, and seamless way.

A relevant tool of WMS that will be implemented in the Pilot Action is a Decision Support System (DSS), implemented in the form of an open-source platform providing optimised transport arrangements for last-mile transport segments by making use of specific algorithms and coordinated data from multiple stakeholders

One of the main objectives of the DSS is to implement a **Truck Appointment System (TAS)**, which will enable a communication exchange between the inland terminal and truck operators, and to support the terminal manager in the optimum scheduling of operations. By allocating specific time slots to trucks via a booking system, the terminal operator will be able to optimize:

- the flows of incoming vehicles (specifying the gate, vehicle inspection, potential parking slot where to wait, etc.)
- resources utilisation and operations management to the expected volume
- traffic conditions to the terminal premises and surrounding areas
- communication between the terminal and the drivers informing on delays, etc.

In addition to the above, the TAS will also be pivotal to advising (Multimodal Transport Operators) (MTOs) on possible free trucks locally available to perform transport operations for the last mile segment. Upon collecting a heterogeneous set of information from multiple actors regarding the final delivery destination, goods type, vehicle sizes, costs of shipments, the DSS will be able to calculate and offer an array of possible scheduling solutions from different logistics operators. Besides, MTOs can put out requests for offers to truckers for the shipment of goods from the terminal through to the final destination. To this end, WMS 4.0 will create a continuous communication channel between MTOs and drivers/transport companies, aimed at optimising cargo delivery to destination by allocating specific time slots and keeping multiple actors informed (e.g., terminal, transport operators, truck companies) on unexpected delays or disruptions.

In summary, the DSS pilot will consist of testing a centralised collaboration platform with MTOs, aimed at collecting from them useful data about their services (e.g., time schedules, origin/destination, delays, ETA/ETD) and providing scheduling support to carriers, other MTOs, dry ports and public authorities. The web application envisaged as part of the pilot will firstly be deployed at Gorizia terminal and will subsequently be open to other dry ports and MTOs in the Programme area, willing to upload their data.

## 2.2. Pilot 2 description - Deliveries Planning

Deliveries Planning is an innovative IT solution, based on Big Data and PCS automation, aimed at better planning multimodal deliveries, based on real-time and predicted traffic conditions, service prices, transit times, schedules & ITU requirements comparisons, automatically suggesting or enabling selection of best travel routes before or during the trip. This tool is a specialized Decision Support System that calculates and suggests routes by processing normalized real-time data coming from external sources and systems used by the port community. Deliveries planning solution can be easily connected to the existing Port and Maritime information systems both as sources and as targets of the Delivery Planning Solution.

The pilot solution has been named DELPLAN, and structured in 2 main phases.

The first phase is concerning the multimodal route planning, which consist in setting up a shipment, selecting a place of departure (any Italian or Croatian provinces) and a place of delivery (any Italian or Croatian provinces), an ETD and an ETA, and the state of the cargo (e.g. solid palletized or not palletized, bulk, liquid, gas, etc.). The system is then asking the user to indicate which ITUs can be considered for the shipment (e.g. a standard 40' or a 45' container, a semitrailer or a bulk or tank container, etc.), and the user can indicate just one ITU for the service or multiple ITUs for the price comparison. Once selected the ITUs, the system will compare, considering road, sea and rail routes available on the market, several routing options, and sort them by three main criteria: Transit Times, Prices and Emissions.

The second phase of the DELPLAN specs, is related to the re-routing functions, where a confirmed shipment can be monitored and, in case of non-compliances on the selected route, replan it using the re-routing options.

### 2.3. Pilot 3 description - Mobile Safety/Security

Passengers are currently trained for emergencies and emergency signaling is installed onboard, but in a real emergency, some escape routes might not be available anymore (especially in case of fire). In such a case, passengers could be obliged to turn back and search for alternative escape routes, wasting time. Moreover, evacuation can be hindered by panic occurrence especially if passengers are lost, which might again increase the time required to evacuate the ship. In this context, the usage of mobile technology can enable a reduction of evacuation time, preventing passengers to take the wrong direction and increasing their situational awareness to limit panic occurrence. The availability of clear guidance information, considering the current status of escape routes, has been already found useful, but a test adopting mobile devices have not been carried out yet.

During the UNITS pilot project, the technical feasibility of a system based on Bluetooth beacons has been investigated. Besides, the effect on the evacuation time due to the usage of mobile technology has been also studied to prove the benefit of such a system. The test on a small test population has been considered first advisable to compare the standard evacuation time with the one related to the adoption of mobile technology. This is the main objective of the pilot action carried out by UNITS within the framework of the DigLogs project. The test environment included an area covering 2 decks connected by multiple staircases on a the GNV Bridge Ro-pax ship. The pilot system is composed of a mobile application to be installed on mobile wearable devices (smartbands) and a backend application to configure and monitor the system from the ship bridge. The APP exploits a Bluetooth beacon net to enable mobile devices 6nauthorized. The pilot system has been developed in collaboration with ETEC Minds S.r.l. (UNITS subcontractor). The system has been designed to prove its main functionalities while being easily scalable in future developments.

## 2.4. Pilot 4 description - Application for Data Flows Management

**Main pilot function** is provision of additional visibility layer to VTS system operators, increasing boat resolution and visibility, showing port basin situation to end stakeholders and passengers and enhancing safety in the area.

**Scope** of the pilot is requisitioning and purchase of the envisaged equipment, its installation and functional integration with the existing VTS system already in use in the Port control center of the Port of Rijeka Authority, and the visualization of the port panoramic presentation for the end user group of passengers using already existing visualization using Web page presentation.

**Exact technical requirements**, connectivity and input-output possibilities are subject to further determination during pilot development and component identification up to its end, as some components might change even during pilot execution. While main components are already identified as a part of analysis and requirements specification, it is possible that some smaller components will be identified later in the pilot execution, so flexibility will be required during later stages.

A required optical system must possess **adequate technical qualities to support envisaged role**. Among **initial and required parameters** that were discussed and considered are:

1. Vehicle (boat/maritime object) detection equal to or larger than length of Rijeka breakwater or other selected installation micro location (for example, passenger yachts quay),
2. Respect of industry Johnson criteria: vehicle size defined as 2,3 m<sup>2</sup>, detection at 2 pixels,

3. 50% probability subject to environmental conditions,
4. Lens F number equal to 1.2 or better, in order to provide optimal sharpness of the image,
5. Resolution, at least 640x480,
6. Adequate camera controls and presentation mode,
7. FLIR capability, and
8. Pan–Tilt–Zoom controls, adding capability of remote directional and zoom controls.

Also, **connection with the system** using *Rijeka Traffic* application (business information system) already used in Rijeka Port Traffic Control center towering over passenger terminal is a prerequisite for successful pilot execution.

**Video camera serving separate visual feed** for display with Rijeka traffic business information system needs to have adequate quality, IP protection and to be weather and elements proof.

**Pilot project limitations** are primarily in form of focus on only passenger area, and not other port areas. Port of Rijeka has a quite diverse port structure, and full coverage would greatly exceed the budget and scope of the proposed pilot project.

**The pilot project goal** is to establish a monitoring system using a highly modular, ready to go, compact surveillance solution, consisting of video and fixed lens thermal cameras, which is ideal for short to medium range surveillance applications, capable to exactly pinpoint every small vessel or other vehicle present or approaching the passenger terminal. This underlines the passenger pilot category, where Port of Rijeka Authority's project neatly fits.

Video sensing device, serving output data to a dedicated, custom made Web client application will be connected via a pilot-developed module to existing traffic system and display in real time the inflow of small and large vessels and vehicles moving at the passenger terminal. *All Silent Sentinel Pan* and *Tilt* systems will be designed with absolute positioning feedback as standard. Also, the system will add more resolution by means of an additional informational layer to already existing VTS radar and connected sensing technology, in order to timely identify any threat detected and remain focused on the target as the threat moves, providing live, real-time update, and enabling both better information and decision making.

Gathered visual and numerical data can be displayed in different venues and forms, for example, in the Port control center (Rijeka traffic system), Port of Rijeka Authority main building, or, in a

limited scope, publicly available at the passenger terminal or yacht quay or other suitable venue, and the operators could make changes and record the vessels currently covered by the existing maritime surveillance system. The idea behind the pilot is to extend visual representation to end users (passengers), using already existing mapping facilities provided by Rijeka traffic system and appropriate graphic elements.

This way, additional benefits will be reaped both by control authorities overseeing traffic via VTS and end user stakeholders – passengers.

**Long term goal** of the project is to broaden the technological base of the Port of Rijeka, and create a technological mesh of solutions, adding a new layer of visibility and constantly increasing the security of passenger maritime traffic in the port basin.

**Decision** on the pilot content was made because existing VTS solution has a pre-set resolution and industry and compliance standard resolution, while Port of Rijeka Authority is aiming to increase minimal requirements and meet stakeholders' expectations. Furthermore, it wishes to open its operative data towards stakeholders, primarily **passengers**.

**The pilot already contains integration** with more complex solutions, namely, port VTS/VTMIS system, adding a new visibility layer in poor conditions, depicting vessels of smaller dimensions.

## 2.5. Pilot 5 description - Innovative solution for Access Control

Ongoing building of the national PCS will have a significant impact on all port of Šibenik stakeholders and their IT systems, and they have been involved in the process from the very beginning, even before than CEF funding was secured. PCS will have several dedicated modules for various concessionaires, and they will have to adjust their systems a part of regular planned internal growth and maintenance activities.

Immediately, it came to one's attention that there is a room for implementation of an innovation within scope of the DigLogs project, in its essence a sustaining incremental innovation, that digitalizes a process that is currently executed manually and presents a large obstacle in modernization of processes inside port of Šibenik, but also is not addressed within the scope of the new to-be PCS system that will also be deployed in the port of Šibenik. This is a new **digital access control system, fully aligned with current business needs, whose full scope is to be defined within this pilot work plan**, and that encompasses stakeholders whose activities are aimed towards processes underlying passengers disembarking and boarding cruisers and passenger ships, port concessionaires, business personnel, vehicles, drivers, containers and other stakeholders within identified target groups. Presently, access control to the Port of Šibenik area is governed by the subject Regulation about identification cards of the Port of Šibenik Authority from 11th September 2015. ID cards used for ingress and egress control and access to information, cargo, premises and operative port spaces are used to identify persons and vehicles and they are particular to a certain person or vehicle and non transferrable. There is also a quite detailed pricing list for permit issuing, as it presents a source of revenue for the Port of Šibenik Authority, in force as of 6th January 2017.

At the beginning of the project, enforcement was still implemented in physical form, using manual labour and plastic cards, causing delays, excessive consumption of time and other resources, and diminishing integration and analytics, contrary to the ISPS requirements and modern business process execution inside ports.

This is especially prevalent when processing large number of passengers from cruisers whose access permits need to be processed sometimes even overnight, using manual process. For

example, passenger terminal Vruļje with a cumulative quay length of 510 meters, has a projected capacity of 1.000.000 passengers annually and with the ongoing capacity expansion to 2.000.000 passengers annually, an inherent need for a new digital system of permits issuing based on innovative digital solution becomes even more clear.

## 2.6. Pilot 6 description - M2M Dialogue

As a part of DigLogs project, the Port of Rovinj Authority decided to upgrade the existing maritime traffic control system to improve information system functionalities related to vessel traffic monitoring while also including all the related activities which enhance the port's performance. This undertake referred to upgrade of the traditional PCS system which will serve its purpose as an intermediary between the given software and the National Single Window's – CIMIS.

The advantage of having this kind of solution greatly exceed its nominal value and it offers the best experience to all of its stakeholders. The project pilot's goal was to establish an alternative to the traditional PCS which can be interconnected with all of the port's stakeholders thus contribute to improve the quality of the system functionality on all levels.

Rovinj Port Authority implemented the application that integrates the operational and accounting system of the Port Authority's operations and it will serve as a local PCS. The application software enables mooring reservation system, graphic mooring occupancy management, billing via mobile application, creating daily, monthly and annual reports, generating mooring contracts, automatic invoicing, CRM-Integrated Email System, accounting, paying invoices and automated importing of bank statements. The system is designed with feature capable of generating feedback in a form of statistical data as well as graphical representation of port's measurable parameters.

Long term goal of the project pilot was to broaden the technological base of the Port of Rovinj, and create a technological mesh of solutions, which in turn increases efficiency and productivity by helping users navigate complex processes, preventing data re-entry, and improving functions in all of the business segments.

## 2.7. Pilot 7 description - Spatial Data Management System

The pilot action is to be implemented in the context of the North Adriatic Sea Port Authority and it regards the adoption of a **centralized and interoperable spatial data repository** aimed at giving a robust structure to the information and data used within the internal processes and to provide services to external operators and institutions.

The pilot belongs to the innovation named “Maritime Big Data / Data management” aimed at obtaining the best results from integrating different data sources in terms of added value in knowledge and management capability.

The pilot action envisaged by the DigLogs project for the Venice port community concerns the creation of a so-called **"Spatial Data Infrastructure" (SDI) at the Port Authority**. A Spatial Data Infrastructure is an integrated data system that allows centralizing the information and digital maps used by different Port Authority offices and also external actors, allowing both, efficiency in management and maintenance of each dataset, and shared access by multiple operators.

The current situation at the Venice Port Authority is such that the use of the available dataset generates several copies and reprocess data within many different and inhomogeneous systems. This kind of management reduces performance and the overall quality in usage and updating of data among various operators makes decision making process significantly inefficient. The Spatial Data Infrastructure (SDI) performs both, data storage and processing functions, making copies no longer necessary and allowing processing to be archived, both in the form of new data archives and as algorithms that provide results in real time, allowing operators to maintain the known methods and tools thanks to the interoperability protocols.

The pilot action envisaged by DigLogs project for the Venice context will include both the **technological implementation** and a **special training program** for the personnel of the Port System Authority.

## 2. Key Performance Indicators

The following subchapters contain the Key Performance Indicators of individual pilot implementation. Several pilots contain specific Key Performance Indicators, which are not applicable to other pilots.

## 2.1. Pilot 1: WMS 4.0 – Dry Port Case Study

No.	Activity	Maturity	Key Performance Indicator	Expected value	Achieved value
1.	Completed project work plan	COMPLETED	Accepted pilot work plan by all PPs	1	1
2.	Written draft of the technical-functional specification	COMPLETED	Written full technical-functional specification	1	1
3.	Public procurement (tendering) documentation	COMPLETED	Issued request(s) for quotation(s) / Total number of request(s) for quotation(s) needed	100%	100%
4.	Received commercial offers	COMPLETED	Received commercial offer(s) / Total number of offer(s) to be received	100%	100%
5.	Evaluation of offers completed and best offers selected	COMPLETED	Best offer(s) selected	1	1
6.	Awarded equipment purchase contracts (if applicable)	Not expected	Awarded purchase equipment contracts	n.a.	n.a.
7.	Awarded integration and/or development services contracts	COMPLETED	Awarded integration and/or development services contracts	1	1

8.	<b>Equipment delivered and installed (if applicable)</b>	COMPLETED	All equipment installed	1	1
9.	<b>Integration and/or development services delivered and completed (if applicable)</b>	COMPLETED	All integration and/or development services completed	1	1
10.	<b>UAT testing</b>	IN PROGRESS	Number of successful tests / Total number of required tests	100%	70%
11.	<b>Full system functional (pilot development completed)</b>	IN PROGRESS	One complete pilot project successful	100%	90%
12.	<b>Number of ICT systems upgraded, enhanced or introduced as a consequence of project execution</b>	IN PROGRESS	At least one ICT system upgraded, enhanced or introduced as a consequence of pilot execution	100%	90%
13.	<b>Amount of funds justifiably spent by the PP for pilot action / Total funds allocated for pilot action</b>	IN PROGRESS	Percentage of available funds from the budget (Application Form) – only HW, SW and integration	100%	0%
14.	<b>Number of secondary affected ICT systems as a consequence of</b>	IN PROGRESS	At least one secondary ICT system affected as a consequence of the pilot execution	100%	20%

	<b>the pilot execution</b>				
15.	<b>Number of improved internal processes as a consequence of the pilot execution</b>	IN PROGRESS	At least one internal process directly benefitting from the pilot execution	100%	10%
16.	<b>Number of affected port terminals, basins, land terminals, vessels or other locations as a consequence of the pilot execution</b>	IN PROGRESS	At least one port terminal, basin, land terminal, vessel or other location positively affected as a consequence of the pilot execution	100%	2%
17.	<b>Increased level of security of port terminal, basin, land terminal, vessel or other location as a direct result of pilot execution</b>	IN PROGRESS	Is the security of port terminal, basin, land terminal, vessel or other location increased as a result of pilot execution?	YES	NO
18.	<b>Increased level of cyber security of involved logistics and transport ICT systems as a direct result of pilot execution</b>	IN PROGRESS	Is the level of cyber security of involved logistics and transport ICT systems increased as a result of pilot execution?	YES	NO
19.	<b>Directly or indirectly lowered GHG emissions as a</b>	IN PROGRESS	Are GHG emissions directly or indirectly lowered as a result of pilot execution?	YES	NO

	direct result of pilot execution				
20.	Timely submitted pilot action completion/closeout reports	IN PROGRESS	Timely reporting on pilot action completion/closeout	YES	NO

## 2.2. Pilot 2: Deliveries Planning

No.	Activity	Maturity	Key Performance Indicator	Expected value	Achieved value
1.	<b>Pilot Concept Drafting</b>	COMPLETED	Accepted pilot work plan by all PPs	1	1
2.	<b>Pilot Functional Design</b>	COMPLETED	Accepted pilot work plan by all PPs	1	1
3.	<b>Pilot Work Plan</b>	COMPLETED	Accepted pilot work plan by all PPs	1	1
4.	<b>Technical Functional Specs</b>	COMPLETED	Detailed functional specs agreed with the development partner	1	1
5.	<b>Input Process</b>	COMPLETED	Input interface completed	1	1
6.	<b>Output Process</b>	COMPLETED	Output interface completed	1	1
7.	<b>Backend solution</b>	COMPLETED	System monitoring completed	1	1
8.	<b>Track and trace, Traffic&amp;weather, RT modules</b>	COMPLETED	Non predictive tools completed	1	1
9.	<b>Re-routing parameters checklist</b>	COMPLETED	Re-routing rules and parameters pre-defined and added to the algorithm	1	1
10.	<b>Frontend solution</b>	COMPLETED	Frontend solution defined and implemented	1	1
11.	<b>Variables/Set of data checklist</b>	COMPLETED	Check of all the variables to be used for the algorithm	1	1
12.	<b>Booking&amp;Transport Orders Pilot Function Configuration</b>	COMPLETED	Booking interface created	100%	100%

13.	<b>ITUs pilot function configuration</b>	COMPLETED	ITUs selection list completed	100%	100%
14.	<b>Travel Section&amp;Nodes Pilot Configuration</b>	COMPLETED	The algorithm for the road, rail and sea services fully configured.	100%	100%
15.	<b>Vessels, Ports and Terminals Pilot Configuration</b>	COMPLETED	HUBs and Vessels added	100%	100%
16.	<b>Trains, Stations and Rail Terminal Pilot Function Configuration</b>	COMPLETED	Trains schedule and HUBs added	100%	100%
17.	<b>Re-Routing parameters pilot function configuration</b>	COMPLETED	Re-routing process fully configured	100%	100%
18.	<b>Actors Mapping and Selection</b>	COMPLETED	Actors have been selected	100%	100%
19.	<b>Actors Instructions</b>	IN PROGRESS	Actors trained to use the system	100%	40%
20.	<b>Deliveries Planning System Testing</b>	IN PROGRESS	Actors have tested the pilot application	100%	60%
21.	<b>Deliveries Planning System Delivered and Completed</b>	COMPLETED	DelPlan pilot application deployed	100%	100%
22.	<b>Data Analysis</b>	IN PROGRESS	The data collected and analyzed suggested valuable inputs into Transferability and Action plans	100%	60%
23.	<b>Dissemination</b>	IN PROGRESS	Dissemination activities, including experiments with stakeholders with the pilot action, have been completed	100%	60%

### 2.3. Pilot 3: Mobile Safety/Security

No.	Activity	Maturity	Key Performance Indicator	Expected value	Achieved value
1.	Completed project work plan	COMPLETED	Accepted pilot work plan by all PPs	1	1
2.	Written draft of the technical-functional specification	COMPLETED	Written full technical-functional specification	1	1
3.	Public procurement (tendering) documentation	COMPLETED	Issued request(s) for quotation(s) / Total number of request(s) for quotation(s) needed	1	3
4.	Received commercial offers	COMPLETED	Received commercial offer(s) / Total number of offer(s) to be received	1	1
5.	Evaluation of offers completed and best offers selected	COMPLETED	Best offer(s) selected	1	1
6.	Awarded equipment purchase contracts (if applicable)	COMPLETED	Awarded purchase equipment contracts	1	1
7.	Awarded integration and/or development services contracts	COMPLETED	Awarded integration and/or development services contracts	1	1
8.	Equipment delivered and installed (if applicable)	COMPLETED	All equipment installed	1	1
9.	Integration and/or development services delivered and completed (if applicable)	COMPLETED	All integration and/or development services completed	1	1
10.	UAT testing	COMPLETED	Number of successful tests / Total number of required tests	100%	100%

11.	<b>Full system functional (pilot development completed)</b>	COMPLETED	One complete pilot project successful	1	1
12.	<b>Number of ICT systems upgraded, enhanced or introduced as a consequence of project execution</b>	COMPLETED	At least one ICT system upgraded, enhanced or introduced as a consequence of pilot execution	1	1
13.	<b>Amount of funds justifiably spent by the PP for pilot action / Total funds allocated for pilot action</b>	COMPLETED	Percentage of available funds from the budget (Application Form) – only HW, SW and integration	100%	100%
14.	<b>Number of secondary affected ICT systems as a consequence of the pilot execution</b>	COMPLETED	At least one secondary ICT system affected as a consequence of the pilot execution	1	1
15.	<b>Number of improved internal processes as a consequence of the pilot execution</b>	COMPLETED	At least one internal process directly benefitting from the pilot execution	2	2
16.	<b>Number of affected port terminals, basins, land terminals, vessels or other locations as a consequence of the pilot execution</b>	COMPLETED	At least one port terminal, basin, land terminal, vessel or other location positively affected as a consequence of the pilot execution	1	1
17.	<b>Increased level of security of port terminal, basin, land terminal, vessel or</b>	COMPLETED	Is the security of port terminal, basin, land terminal, vessel or other	YES	YES

	<b>other location as a direct result of pilot execution</b>		location increased as a result of pilot execution?		
<b>18.</b>	<b>Increased level of cyber security of involved logistics and transport ICT systems as a direct result of pilot execution</b>	N/A	Is the level of cyber security of involved logistics and transport ICT systems increased as a result of pilot execution?		
<b>19.</b>	<b>Directly or indirectly lowered GHG emissions as a direct result of pilot execution</b>	N/A	Are GHG emissions directly or indirectly lowered as a result of pilot execution?		
<b>20.</b>	<b>Timely submitted pilot action completion/closeout reports</b>	COMPLETED	Timely reporting on pilot action completion/closeout	YES	YES
<b>21.</b>	<b>Trials</b>	COMPLETED	Number of persons taking part at trials on GNV Bridge	30	37
<b>22.</b>	<b>Evacuation time reduction</b>	COMPLETED	Mean percentage of evacuation time reduction due to the introduction of the technology in the test environment	n/a	16.9%

## 2.4. Pilot 4: Application for Data Flows Management

No.	Activity	Maturity	Key Performance Indicator	Expected value	Achieved value
1.	Completed project work plan	COMPLETED	Accepted pilot work plan by all PPs	1	1
2.	Written draft of the technical-functional specification	COMPLETED	Written full technical-functional specification	2	2
3.	Public procurement (tendering) documentation	COMPLETED	Issued request(s) for quotation(s) / Total number of request(s) for quotation(s) needed	6	6
4.	Received commercial offers	COMPLETED	Received commercial offer(s) / Total number of offer(s) to be received	2	2
5.	Evaluation of offers completed and best offers selected	COMPLETED	Best offer(s) selected: <b>Maritech Adriatic, Ltd.</b> <b>Hexis, Ltd.</b>	2	2
6.	Awarded equipment purchase contracts (if applicable)	COMPLETED	Awarded purchase equipment contracts	1	1
7.	Awarded integration and/or development services contracts	IN PROGRESS	Awarded integration and/or development services contracts	1	1
8.	Equipment delivered and installed (if applicable)	COMPLETED	All equipment installed	2	2

9.	<b>Integration and/or development services delivered and completed (if applicable)</b>	IN PROGRESS	All integration and/or development services completed	1	<b>1</b>
10.	<b>UAT testing</b>	COMPLETED	Some functions are in everyday use so no number can be specified	100%	<b>100%</b>
11.	<b>Full system functional (pilot development completed)</b>	IN PROGRESS	One complete pilot project successful	1	<b>1</b>
12.	<b>Number of ICT systems upgraded, enhanced or introduced as a consequence of project execution</b>	COMPLETED	At least one ICT system upgraded, enhanced or introduced as a consequence of pilot execution	1+	<b>3</b>
13.	<b>Amount of funds justifiably spent by the PP for pilot action / Total funds allocated for pilot action</b>	IN PROGRESS	Percentage of available funds from the budget (Application Form) – only HW, SW and integration	100%	100%
14.	<b>Number of secondary affected ICT systems as a consequence of the pilot execution</b>	IN PROGRESS	At least one secondary ICT system affected as a consequence of the pilot execution	1+	<b>1</b>
15.	<b>Number of improved internal processes as a consequence of the pilot execution</b>	IN PROGRESS	At least one internal process directly benefitting from the pilot execution	1+	<b>2</b>
16.	<b>Number of affected port terminals, basins, land</b>	COMPLETED	At least one port terminal, basin, land terminal, vessel or other location	1+	<b>2</b>

	<b>terminals, vessels or other locations as a consequence of the pilot execution</b>		positively affected as a consequence of the pilot execution		
<b>17.</b>	<b>Increased level of security of port terminal, basin, land terminal, vessel or other location as a direct result of pilot execution</b>	COMPLETED	Is the security of port terminal, basin, land terminal, vessel or other location increased as a result of pilot execution?	YES/NO	<b>YES</b>
<b>18.</b>	<b>Increased level of cyber security of involved logistics and transport ICT systems as a direct result of pilot execution</b>	IN PROGRESS	Is the level of cyber security of involved logistics and transport ICT systems increased as a result of pilot execution?	YES/NO	<b>YES</b>
<b>19.</b>	<b>Directly or indirectly lowered GHG emissions as a direct result of pilot execution</b>	IN PROGRESS	Are GHG emissions directly or indirectly lowered as a result of pilot execution?	YES/NO	<b>YES</b>
<b>20.</b>	<b>Timely submitted pilot action completion/closeout reports</b>	IN PROGRESS	Timely reporting on pilot action completion/closeout	YES/NO	<b>YES</b>

## 2.5. Pilot 5: Innovative solution for Access Control

No.	Activity	Maturity	Key Performance Indicator	Expected value	Achieved value
1.	Completed project work plan	COMPLETED	Accepted pilot work plan by all PPs	1	1
2.	Written draft of the technical-functional specification	COMPLETED	Written full technical-functional specification	1	1
3.	Public procurement (tendering) documentation	COMPLETED	Issued request(s) for quotation(s) / Total number of request(s) for quotation(s) needed	3	3
4.	Received commercial offers	COMPLETED	Received commercial offer(s) / Total number of offer(s) to be received	3	1
5.	Evaluation of offers completed and best offers selected	COMPLETED	Best offer(s) selected: <b>Disk Ltd.</b>	1	1
6.	Awarded equipment purchase contracts (if applicable)	COMPLETED	Awarded purchase equipment contracts	1	1
7.	Awarded integration and/or development services contracts	COMPLETED	Awarded integration and/or development services contracts	1	1
8.	Equipment delivered and installed (if applicable)	COMPLETED	All equipment installed	1	1
9.	Integration and/or development services delivered	COMPLETED	All integration and/or development services completed	1	1

	<b>and completed (if applicable)</b>				
<b>10.</b>	<b>UAT testing</b>	COMPLETED	All functions are in everyday use so no number can be specified	100%	<b>100%</b>
<b>11.</b>	<b>Full system functional (pilot development completed)</b>	COMPLETED	One complete pilot project successful	1	<b>1</b>
<b>12.</b>	<b>Number of ICT systems upgraded, enhanced or introduced as a consequence of project execution</b>	COMPLETED	At least one ICT system upgraded, enhanced or introduced as a consequence of pilot execution	1+	<b>1</b>
<b>13.</b>	<b>Amount of funds justifiably spent by the PP for pilot action / Total funds allocated for pilot action</b>	IN PROGRESS	Percentage of available funds from the budget (Application Form) – only HW, SW and integration	100%	100%
<b>14.</b>	<b>Number of secondary affected ICT systems as a consequence of the pilot execution</b>	IN PROGRESS	At least one secondary ICT system affected as a consequence of the pilot execution	1+	<b>1</b>
<b>15.</b>	<b>Number of improved internal processes as a consequence of the pilot execution</b>	COMPLETED	At least one internal process directly benefitting from the pilot execution	1+	<b>6</b>
<b>16.</b>	<b>Number of affected port terminals, basins, land terminals, vessels or other locations as a</b>	COMPLETED	At least one port terminal, basin, land terminal, vessel or other location positively affected as a	1+	<b>2</b>

	consequence of the pilot execution		consequence of the pilot execution		
17.	Increased level of security of port terminal, basin, land terminal, vessel or other location as a direct result of pilot execution	COMPLETED	Is the security of port terminal, basin, land terminal, vessel or other location increased as a result of pilot execution?	YES/NO	YES
18.	Increased level of cyber security of involved logistics and transport ICT systems as a direct result of pilot execution	COMPLETED	Is the level of cyber security of involved logistics and transport ICT systems increased as a result of pilot execution?	YES/NO	YES
19.	Directly or indirectly lowered GHG emissions as a direct result of pilot execution	IN PROGRESS	Are GHG emissions directly or indirectly lowered as a result of pilot execution?	YES/NO	YES
20.	Timely submitted pilot action completion/closeout reports	IN PROGRESS	Timely reporting on pilot action completion/closeout	YES/NO	YES

## 2.6. Pilot 6: M2M Dialogue

No.	Activity	Maturity	Key Performance Indicator	Expected value	Achieved value
1.	Completed project work plan	COMPLETED	Accepted pilot work plan by all PPs	1	1
2.	Written draft of the technical-functional specification	COMPLETED	Written full technical-functional specification	1	1
3.	Public procurement (tendering) documentation	COMPLETED	Issued request(s) for quotation(s) / Total number of request(s) for quotation(s) needed	3	3
4.	Received commercial offers	COMPLETED	Received commercial offer(s) / Total number of offer(s) to be received	3	1
5.	Evaluation of offers completed and best offers selected	COMPLETED	Best offer(s) selected: <b>Marina Master</b>	1	1
6.	Awarded equipment purchase contracts (if applicable)	COMPLETED	Awarded purchase equipment contracts	1	1
7.	Awarded integration and/or development services contracts	COMPLETED	Awarded integration and/or development services contracts	1	1
8.	Equipment delivered and installed (if applicable)	COMPLETED	All equipment installed	1	1
9.	Integration and/or development services delivered and completed (if applicable)	COMPLETED	All integration and/or development services completed	1	1
10.	UAT testing	COMPLETED	Some functions are in everyday use so no number can be specified	100%	90%
11.	Full system functional (pilot development completed)	IN PROGRESS	One complete pilot project successful	1	1
12.	Number of ICT systems upgraded, enhanced or introduced as a consequence of project execution	COMPLETED	At least one ICT system upgraded, enhanced or introduced as a consequence of pilot execution	1+	3

13.	Amount of funds justifiably spent by the PP for pilot action / Total funds allocated for pilot action	IN PROGRESS	Percentage of available funds from the budget (Application Form) – only HW, SW and integration	100%	100%
14.	Number of secondary affected ICT systems as a consequence of the pilot execution	IN PROGRESS	At least one secondary ICT system affected as a consequence of the pilot execution	1+	1
15.	Number of improved internal processes as a consequence of the pilot execution	IN PROGRESS	At least one internal process directly benefitting from the pilot execution	1+	3
16.	Number of affected port terminals, basins, land terminals, vessels or other locations as a consequence of the pilot execution	COMPLETED	At least one port terminal, basin, land terminal, vessel or other location positively affected as a consequence of the pilot execution	1+	13
17.	Increased level of security of port terminal, basin, land terminal, vessel or other location as a direct result of pilot execution	COMPLETED	Is the security of port terminal, basin, land terminal, vessel or other location increased as a result of pilot execution?	YES/NO	YES
18.	Increased level of cyber security of involved logistics and transport ICT systems as a direct result of pilot execution	IN PROGRESS	Is the level of cyber security of involved logistics and transport ICT systems increased as a result of pilot execution?	YES/NO	YES
19.	Directly or indirectly lowered GHG emissions as a direct result of pilot execution	IN PROGRESS	Are GHG emissions directly or indirectly lowered as a result of pilot execution?	YES/NO	YES
20.	Timely submitted pilot action completion/closeout reports	IN PROGRESS	Timely reporting on pilot action completion/closeout	YES/NO	YES

## 2.7. Pilot 7: Spatial Data Management System

No.	Activity	Maturity	Key Performance Indicator	Expected value	Achieved value
1.	Completed project work plan	COMPLETED	Accepted pilot work plan by all PPs	1	1
2.	Written draft of the technical-functional specification	COMPLETED	Written full technical-functional specification	1	1
3.	Public procurement (tendering) documentation	COMPLETED	Issued request(s) for quotation(s) / Total number of request(s) for quotation(s) needed	2	2
4.	Received commercial offers	N/A	Received commercial offer(s) / Total number of offer(s) to be received	0	0
5.	Evaluation of offers completed and best offers selected	N/A	Best offer(s) selected	0	0
6.	Awarded equipment purchase contracts (if applicable)	N/A	Awarded purchase equipment contracts	0	0
7.	Awarded integration and/or development services contracts	COMPLETED	Awarded integration and/or development services contracts	2	2
8.	Equipment delivered and installed (if applicable)	N/A	All equipment installed	0	0

9.	<b>Integration and/or development services delivered and completed (if applicable)</b>	N/A	All integration and/or development services completed	0	0
10.	<b>UAT testing</b>	IN PROGRESS	Number of successful tests / Total number of required tests	100%	20%
11.	<b>Full system functional (pilot development completed)</b>	COMPLETED	One complete pilot project successful	1	1
12.	<b>Number of ICT systems upgraded, enhanced, or introduced as a consequence of project execution</b>	COMPLETED	At least one ICT system upgraded, enhanced or introduced as a consequence of pilot execution	1+	1
13.	<b>Amount of funds justifiably spent by the PP for pilot action / Total funds allocated for pilot action</b>	IN PROGRESS	Percentage of available funds from the budget (Application Form) – only HW, SW and integration	100%	70%
14.	<b>Number of secondary affected ICT systems as a consequence of the pilot execution</b>	N/A	At least one secondary ICT system affected as a consequence of the pilot execution	0	0
15.	<b>Number of improved internal processes as a consequence of the pilot execution</b>	IN PROGRESS	At least one internal process directly benefitting from the pilot execution	1+	16
16.	<b>Number of affected port terminals, basins, land</b>	COMPLETED	At least one port terminal, basin, land terminal, vessel or other location positively	1+	2

	<b>terminals, vessels or other locations as a consequence of the pilot execution</b>		affected as a consequence of the pilot execution		
17.	<b>Increased level of security of port terminal, basin, land terminal, vessel or other location as a direct result of pilot execution</b>	COMPLETED	Is the security of port terminal, basin, land terminal, vessel or other location increased as a result of pilot execution?	YES	YES
18.	<b>Increased level of cyber security of involved logistics and transport ICT systems as a direct result of pilot execution</b>	COMPLETED	Is the level of cyber security of involved logistics and transport ICT systems increased as a result of pilot execution?	NO	NO
19.	<b>Directly or indirectly lowered GHG emissions as a direct result of pilot execution</b>	IN PROGRESS	Are GHG emissions directly or indirectly lowered as a result of pilot execution?	YES	YES
20.	<b>Timely submitted pilot action completion/closeout reports</b>	IN PROGRESS	Timely reporting on pilot action completion/closeout	YES	YES
21.	<b>Number of spatial datasets optimized and migrated into the system</b>	COMPLETED	At least the number of datasets included into the initial defined list	17+	19
22.	<b>Number of employees trained</b>	IN PROGRESS	At least one employee for each involved department	6+	8