Pilot action final report

Port of Ancona

D.4.2.6

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Table of contents

1. Ex-ante situation – Background of the pilot action

The pilot action realized within PROMARES project focused on the upgrading of the Artificial Intelligent system implemented in the port of Ancona for the tracking and recognition of trucks embarking and disembarking at the port of Ancona. The project allows also to transfer the customs parking area located at the Rizzo pier (Molo Rizzo, see picture 1) of the Port of Ancona to the Marotti area (Scalo Marotti, see picture 1), located outside of the customs circuit, thus virtually expanding the port areas.

Fig. 1: Customs gate and facilities

The AI software was implemented in the framework of SMART-C project, financed under CEF programme, and it was developed in cooperation with the National Customs and Monopolies Agency. The AI software is in fact interoperable with the AIDA software: the customs information of trucks in the extra-Schengen flows are uploaded in the AI software by the freight forwarders, and are used by customs operators, thanks to the interoperability with AIDA software, to implement the controls in a fully digitalized process.

The upgrading of Artificial Intelligent System realized under PROMARES project consists in the optimization of the AI software to increase the efficiency of the informative flow transferred to the AIDA system to validate the embarking and disembarking flows of trucks in transit in the port of Ancona.
The described pilot action differs from the initial hypothesis foreseen under PROMARES project and reported in the “Del 4.2.10 – Pilot action intermediate report of PP6 Central Adriatic Ports

Authority" which consisted in a feasibility technical study and in the executive project of the extension of the TINS model to the commercial dock" that couldn't be realized; the extension of the AI intelligent system to the commercial area for the tracking of the container traffic will be realized later on, according to the new programming needs of this Authority in cooperation with the programming strategy of the National Customs Agency.

2 Pilot action description

The AI system was set up during the year 2021 and its interoperability with the AIDA system was tested and thoroughly verified during the last months of 2021 in a context of real traffic flows of trucks embarking and disembarking in the port areas.
However, during the tests an critical issue emerged which endangered the smooth and correct flow of information between the AI software and the AIDA software:

In case of congestion and intense traffic, during the disembarkation phase the vehicles leaving the ferries moored at the non-Schengen gates are asked to operate maneuvers that bring them within the visual range of the cameras of the boarding Extra-Schengen Gate. Consequently, the artificial intelligence system signals the aforementioned vehicles to the AIDA software as vehicles in the embarkation phase, creating an interference with the data loaded on the Ai software application relating to the disembarkation lists of the vehicles. The AIDA software therefore does not recognize this flow of vehicles as correct and prevents from completing the tracking of the vehicles according to the regular procedure provided.

The proposed solution envisages the modification of the corridor validation logics, introducing the possibility of defining *optional transits* under some gates, for which the system will not communicate the transit to AIDA. With this solution, the system will consider as valid routes those that do not comply with the project specifications, with vehicles passing or not through optional gates, without communicating these transits to AIDA. This solution is not applicable indiscriminately to any route or passage, as there are some necessary boundary conditions that must be met to consistently verify the validity of the transits made by a vehicle. For this reason, this solution is currently applicable only to the problem subject of this analysis, that is the unplanned transit of Extra-Schengen disembarking vehicles from the F2B gate.

Fig. 2: Disembarking path from Extra Schengen terminal, without custom clearing procedures and scanner procedure – *as it is*

Fig. 3: Disembarking path from Extra Schengen terminal, without custom clearing procedures and scanner procedure – *with optional transit corridor*

Fig. 4: Disembarking path from Extra Schengen terminal, with custom clearing procedures and no scanner procedure – *as it is*

Fig. 5: Disembarking path from Extra Schengen terminal, with custom clearing procedures and no scanner procedure – *with optional transit corridor*

Fig. 6: Disembarking path from Extra Schengen terminal, with custom clearing procedures and scanner procedure – *as it is*

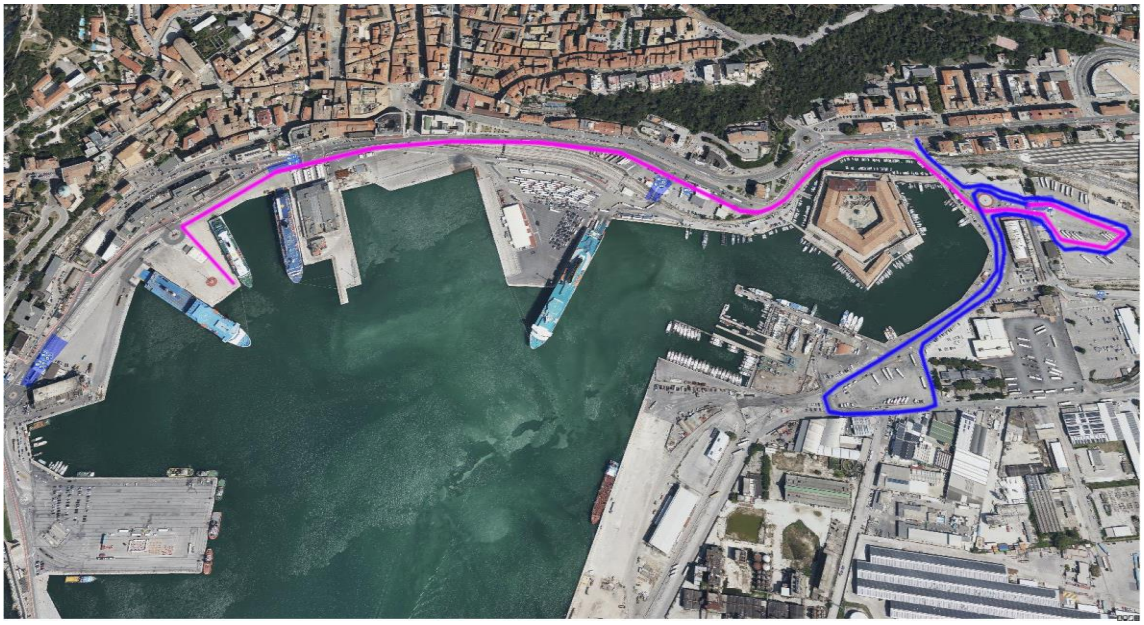

Fig. 7: Disembarking path from Extra Schengen terminal, with custom clearing procedures and scanner procedure – *with optional transit corridor*

3 Stakeholders

The pilot action realized within the PROMARES project, involved a multitude of actors and authorities:

- CUSTOMS NATIONAL AGENCY: the National Customs Agency, responsible for the fiscal and security controls of freight in entrance and exit from the UE ports, is the key stakeholder of TINS project in the port of Ancona. In July 2019, a Memorandum of Understanding was signed between the National Customs Agency and the Central Adriatic Ports Authority with the aim of cooperating for the digitalization of the procedures of the port of Ancona. The MoU foresees, among other aspects, the interoperability between the AIDA system, online system of the Custom Agency allowing the implementation of formal custom procedures for the operators, and the software implemented by the port of Ancona to dialogue with the Artificial Intelligent system.

- FINANCIAL CORPS: as military corps in charge of the security controls on the freight in entrance and exit in the port areas, Financial Corps operating in the port of Ancona have been involved since the beginning phase, directly benefiting of the increased efficiency of the security controls performed also via the Artificial Intelligence system.

- COAST GUARD/HARBOUR MASTER: the Harbor Master of the port of Ancona has been involved since the initial phases of the project, being responsible for the safety of maritime navigation and of the ship's movements and safety in the port basin area.

- AGENMAR: Association representative of the maritime agents and forwarders of Marche and Abruzzo regions, it has been involved in the PROMARES project specifically concerning the extension of the TINS project to the container traffic. Within PROMARES project AGENMAR, elaborated an analysis that highlights the main bottlenecks affecting the procedures of the embarking and disembarking of containers at the commercial terminal of the port of Ancona. The study directly contributes to the realization of the present Pilot Action.

- MARITIME AGENCIES AND FREIGHT FORWARDERS: as single actors involved in the formal and operative procedures for the maritime traffic (via ferry, container), they will be involved at a later stage, as main users of the new IT system.

4 Impacts and replicability

The impact of the setting up of an AI system for the tracking of trucks in the port areas and its interoperability with AIDA system for the digitalization of the customs clearing procedures, and in particular the fine-tuning of the system that allowed the optimization of the system during the disembarking phase at the extra-Schengen terminal, was very positive. Overall, the interoperability with AIDA software opened to the full digitalization of the customs clearing procedures. Moreover, the optimization of the trucks path inside the port areas compared to the initial situation allows a reduction of the kilometers travelled inside the port areas by 60.000 km/ year.

The Pilot Action implemented brought interesting advantages to the port and its stakeholders as the automatic tracking of trucks movements in the port areas and the digitalization of customs formalities contributed to increase the efficiency of port operations, with benefits in terms of time saving and real time control for all the actors involved in the logistics chain (Customs, Financial Corps, forwarders, drivers, maritime agencies, etc.)

The replicability potential of the setting up of an AI system for the tracking of trucks in the port areas and its interoperability with AIDA system for the digitalization of the customs clearing procedures is very high. The experience realized and currently operative in the port of Ancona, fine-tuned thanks to the pilot action realized in PROMARES project can be easily transferred to other ports in Italy, in Europe and beyond, starting from the best practice of Ancona.