



## SMART PORT VEHICLE MANAGEMENT

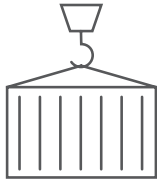


### TIGHT INTEGRATION OF EGNSS AND ON-BOARD SENSORS FOR PORT VEHICLE AUTOMATION

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 687534

[www.logimatic-project.eu](http://www.logimatic-project.eu)

## EXECUTIVE SUMMARY OF THE LOGIMATIC PROJECT



**LOGIMATIC** aims at implementing and validating an accurate **localization and navigation system to automate the port vehicle operations** in an enhanced container chain management in port yards. This technology will increase the efficiency of this type of operations, speeding up the tasks, enabling resource and space optimization and allowing extended and safer operations.

The core of the project is a cost-effective, real-time positioning system that primary relies on a **combination of a multi-constellation GNSS receiver with on-board sensors** in order to provide a continuous, reliable and accurate estimation of the position and velocity of the platforms. This solution will be augmented by EGNOS to improve the accuracy and integrity of the solution throughout the operations.

The solution will be integrated on the Straddle Carrier as part of an On-board Navigation Unit (ONU). This unit will communicate with a centralized system for monitoring purposes and to exchange action plans and progress reports of their daily tasks.

The centralized monitoring station integrates a **GIS tool and the existing Centralized Monitoring System**. It will be connected to all the port vehicles via a wireless network to receive the current position of the platform and real-time tasks progress. The continuous precise estimation of the carriers location will allow for the optimization of the operations (at system level) and the trajectories (at subsystem level).



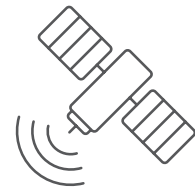


The project's objective describes the project's outcomes: intended and direct, short- and medium-term effects on the target group.

## PROJECT OBJECTIVES

### The scientific and technological objectives of the project are:

- **To develop** an advanced automated navigation solution based on the integration of Global Navigation Satellite Systems (GNSS) and sensors on-board the SC vehicles.
- **To implement** a GIS-based control module compatible with existing Terminal Operating Systems (TOS) for optimized global (yard level) route planning and fleet management. The module's objective is to offer efficient transport logistics within yard operations and compensate for the loss of local driver intelligence
- **To implement** security mechanism in order to detect and avoid spoofing and/or jamming attack, this makes the whole system more reliable to the cyber-attack
- **To assess** the impact of application of such automated approach at large scale through simulation
- **To integrate**, validate and demonstrate the proposed solution in a real port yard



## PROJECT IMPACTS

### The main expected impacts of LOGIMATIC project are:

- **Improving** productivity by increasing operational efficiency
- **Increasing** task accuracy and reducing errors
- **Faster** cycle times
- **Reducing** labour and operational costs
- **Reduce** worker strain and safety incidents
- **Replace** of relatively low skilled jobs with high-skilled supervision and remote operations jobs



**LOGIMATIC** builds upon extensive experience in positioning technologies, worldwide market expertise and leading position of the consortium as a whole. The partners demonstrable capability of commercialization is proven by their previous achievements and a solid proposal for market penetration.



### Project Funding

The project is funded by the European GNSS Agency under H2020-Galileo-2015-1 (<http://www.gsa.europa.eu/>)



### Total Budget of the Project

2.386.925 €



### EU Contribution

2.002.910 €

# CONSORTIUM



## SPAIN



**FUNDACIO EURECAT** (Eurecat) is the Technology Centre of Catalonia providing differential technology and advanced expertise boosting innovation and enhancing industrial competitiveness. Eurecat is the Project Coordinator and responsible of integration and tests.



**INSTITUT DE ROBÒTICA I INFORMÀTICA INDUSTRIAL (IRI)** is a Joint Research Center of the Technical University of Catalonia (UPC) and the Spanish Council for Scientific Research (CSIC). IRI leads the integration of EGSS signals and on-board sensors.



**EMERSON INDUSTRIAL AUTOMATION IVERIA S.A. (EMERSON)** is a worldwide engineering company providing products, solutions and services for industrial automation. EMERSON is responsible of the Straddle Carrier automation.



**ASOCIACIÓN ESPAÑOLA DE NORMALIZACION Y CERTIFICACIÓN (AENOR)** is a non-profit-making private independent and multisectorial organisation devoted to standardization and certification. AENOR is responsible of the standardization and regulatory aspects of the project.



## GREECE



**THESSALONIKI PORT AUTHORITY SA THPA** is the port hosting the pilot “Thessaloniki Port Authority SA”, trading as “ThPA SA”, was established in 1999, upon the conversion of the Legal Entity of Public Law “Thessaloniki Port Authority” into a public limited company.



**DIEVROPAIKI ETAIRIA SYBOULON METAFORON ANAPTIXIS KAI PLIROFORIKIS AE TREDIT** is the technology provider of the yard management system of the port of Thessaloniki TREDIT S.A. (“Trans-European Consultants for Transport, Development and Information Technology S.A.”) is a 20 - year consulting company with an extensive experience record in Integrated Studies for Public and Private Organisations in Greece and E.U.



**ETHNIKO KENTRO EREVNAS KAI TECHNOLOGIKIS ANAPTYXIS CERTH** is the research center responsible for modeling the autonomous vehicles in the port area. The Centre for Research and Technology-Hellas (CERTH) founded in 2000 is one of the leading research centres in Greece and listed among the TOP-25 E.U. institutions with the highest participation in competitive research grants.



## ITALY



**D'APPOLONIA SPA DAPP** is the responsible for the business models definition D'Appolonia S.p.A., part of the RINA Group, is the largest fully independent Italian firm providing consulting & engineering services to Clients belonging both to the public and the private sector.



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