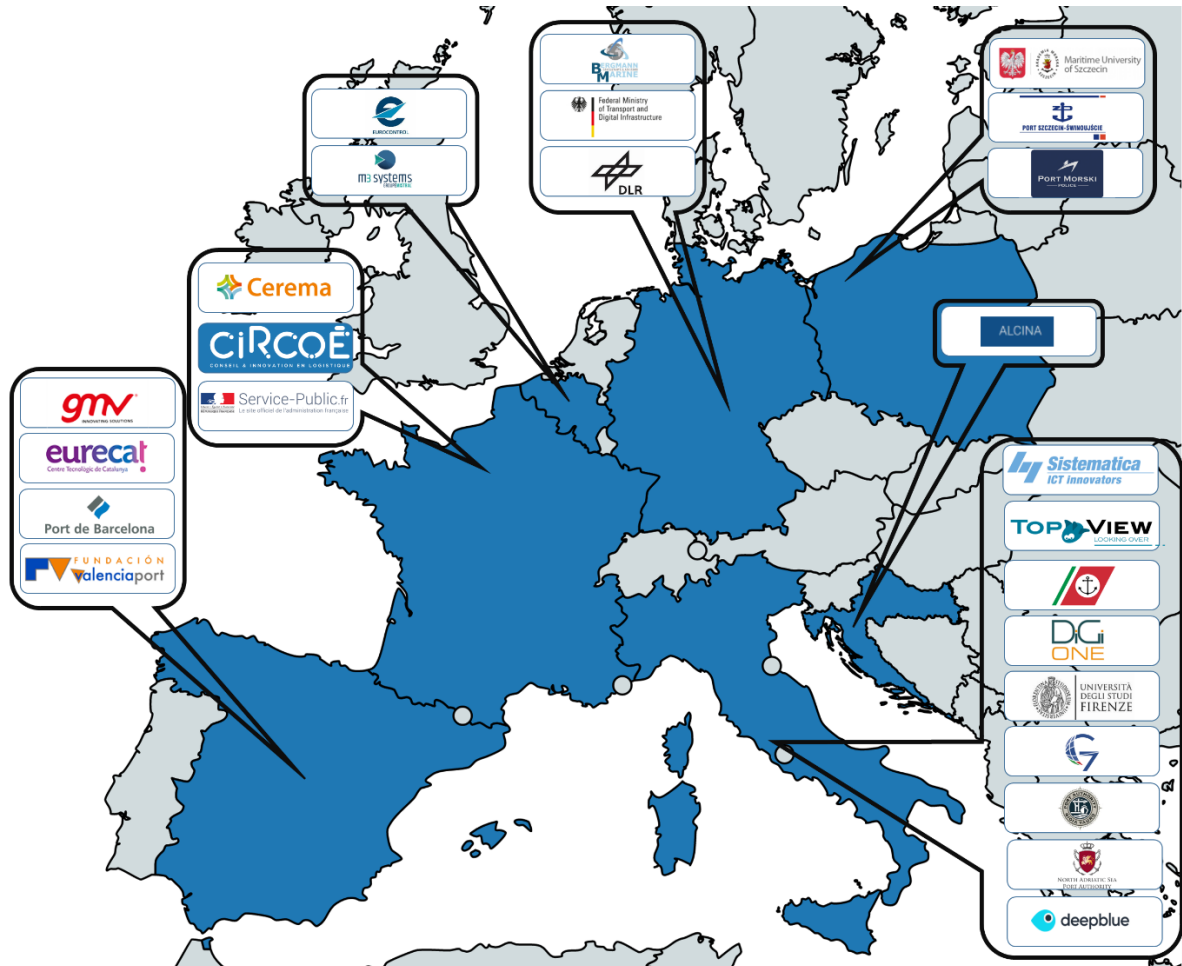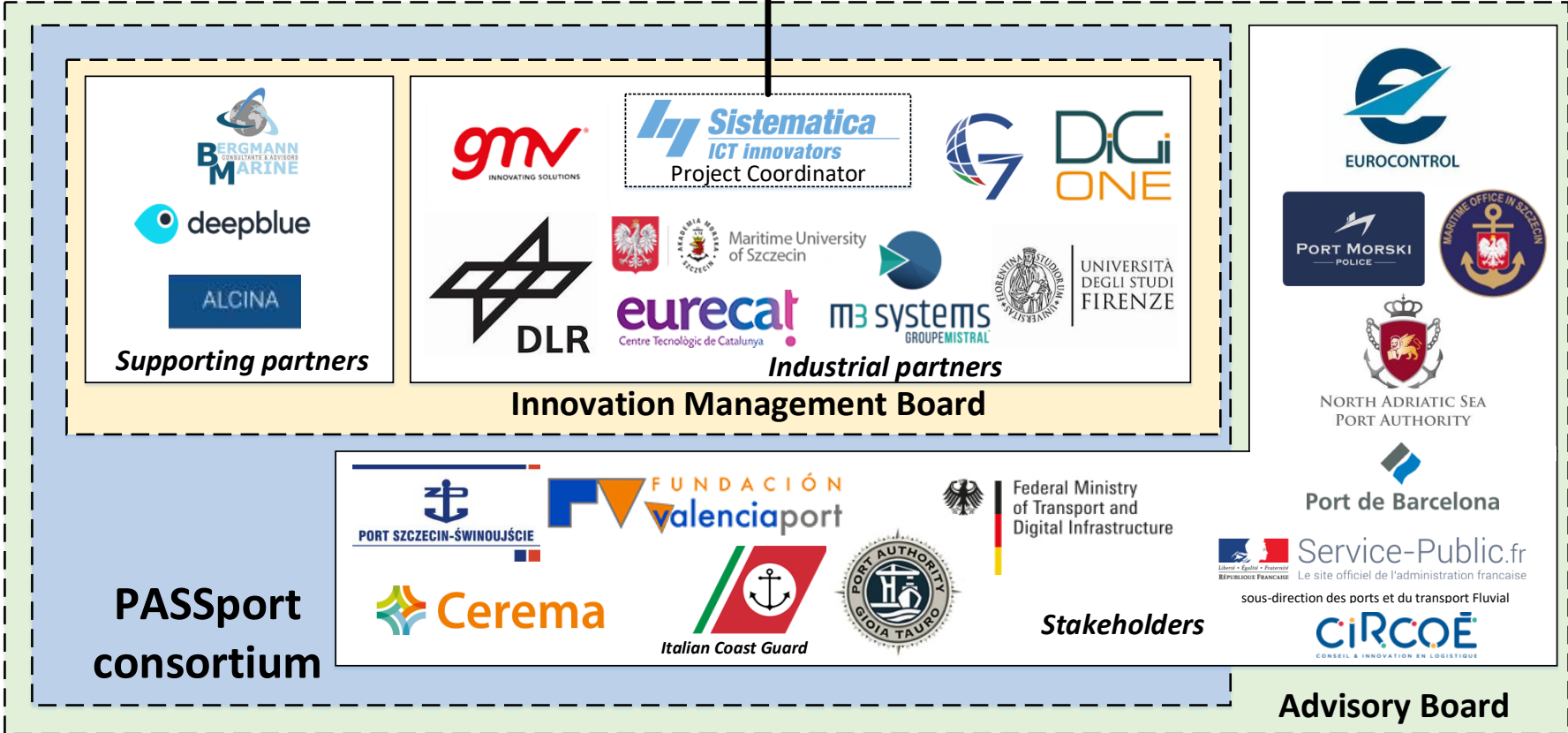# PASSport

*Operational **P**latform managing a fleet of semi-autonomous drones exploiting GNSS high **A**ccuracy and Authentication to improve **S**ecurity & **S**afety in **port** areas*

PASSport initiative aims to address the main objective of Directive 2005/65/EC [3] on enhancing port security which is about to complement the measures adopted in 2004 by means of Regulation (EC) No 725/2004 [4] on enhancing ship and port facility security. The Directive complements the mechanism provided for by establishing a security system for all of the port area, in order to ensure a high and equal level of security for all European ports. Around one thousand of these ports fall within the scope of the Directive.

The European Commission asked the Joint Research Centre (JRC) to carry out a study on the implementation of the Directive in European ports, namely "Study on the technical aspects of port security (TAPS II)". The final report proposed a methodology with two successive stages of checks, one defining port facilities and characteristics forming part of the port, and the other identifying, by means of a risk analysis, the port boundaries so as to establish the most efficient port security & safety.

GSA

Innovation Management Board

Supporting partners

Industrial partners

Sistematica ICT innovators
Project Coordinator

PASSport consortium

Stakeholders

Advisory Board

PASSport proposition

Considering the above scenario, the PASSport consortium is proposing an Emergency Management Platform (referred as EMP) in order to guarantee the following main functionalities:

- ✓ *Measurement of threats awareness and awareness-raising among players*. Once the assets and infrastructure which need to be protected are identified against the threats and risks of intentional illegal action facing port activities, the PASSport platform proposes designing and implementing appropriate measures which can be used to counteract threats, at each of the three risk levels identified (normal, increased, high), by means of specific procedures and by using technical equipment tailored to the needs of ports and which make it possible to provide the right response to the potential vulnerability of infrastructure.

- ✓ *Inspection and supervision of port security areas.* The PASSport platform is providing proper HMI to monitor, in an appropriate and regular manner, port security and the implementation of relevant procedures. In particular, by integrating dedicated sensors in procedures catalogues (also for emergency situations) the platform provides the operator with an overall security index and indicates activities to be followed in case of alert.

From an architectural point of view, the EMP (which is the core of PASSport solution) is integrated with dedicated sensors. In particular, PASSport solution is conceived to build up a semi-automated system based upon

- ✓ **Rotary wings and Fixed Wings Remotely Piloted Aircrafts** (RPAs) **autonomously** flying in the port area

- ✓ Deployable **tethered** Remotely Piloted Aircrafts (RPAs) which is tightly coupled with a building through a cable (tethered flight, heritage of SARA project, www.thesaraproject.eu);

- ✓ **Underwater** drones

Captured images are processed in real time by a local computer. RPAs are equipped with high accuracy GNSS receivers (i.e. Galileo ready) in order to provide a proper positioning to guarantee autonomous and secure (authenticated Galileo signal will be also used) and continuous operations.

The aforementioned solution (based on thermal and optical images) is integrated with already existing sensors in the port area (i.e. radars), not allowing to detect the traffic generated by small crafts not equipped with cooperative instrumentations (e.g. AIS).

Regulatory framework on highly automated and autonomous drone operations.

EASA, defers autonomous operations to when UTM (Unmanned Traffic Management) and U-Space (European UTM) will be fully operational[1]. **This lack of a fully developed regulatory framework for highly automated and autonomous operations does not mean that they are forbidden.** Instead, **safe and secure experimentations of those technologies are encouraged, and their feedback are considered valuable contributions to the definition of new recommendations, procedures and rules**. From this point of view, we believe that PASSport, with its set of experiments carried out with increasing levels of automation, and with a constant consideration of the associated safety and regulatory aspects, **shall provide the community - and EASA in particular** - with useful information and data.

Consortium.

- ✓ Sistematica S.p.A. (IT) (www.grupposistematica.it, coordinator, developer of integrated Service Centre for M&C and RPA platform and payload integration – supported by TOPview, www.topview.it). Sistematica brings the heritage of H2020 SARA project (www.thesaraproject.eu). It develops rotary wings and underwater drones

- ✓ University of Florence (www.unifi.it) supporting for underwater drones

- ✓ Digi-one (www.digi-one.eu) as cyber security expert

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[1] https://www.easa.europa.eu/newsroom-and-events/news/safe-operations-drones-europe

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- ✓ G7 international s.r.l. (IT) (https://www.g7international.com/, supporting for EMP and operational scenarios)

- ✓ EURECAT (SP) (www.eurecat.org), working on Target detection and tracking (including persons/victim detection on ground or on the water) and Use of Visual/Thermal/Multispectral sensors for inspection and operations monitoring. EURECAT brings the heritage of H2020 Logimatic project (www.logimatic-project.eu/)

- ✓ GMV (SP) (www.gmv.com/en) supporting with GNSS high accuracy and authentication

- ✓ Maritime University of Szczecin (PL) (https://www.am.szczecin.pl/en/), supporting for user needs validation and dissemination.

- ✓ Alcina (CR) (www.alcin.hr/en) supporting for business plan activity

- ✓ Deepblue (IT) (www.dblue.it) supporting for RPA regulatory framework

- ✓ DLR (GER) (www. https://www.dlr.de/EN/Home/home_node.html) supporting for drone operations and certification in aeronautic domain

- ✓ Bergmann Marine (GER) (https://www.bergmann-marine.com/) supporting for dissemination activities and certification in maritime domain

- ✓ M3 System(FRA) (www. https://m3systems.eu/en/home/) for fixed wings drones

- ✓ Stakeholders:

    - o Italian Coast Guard, Port Authority of Gioia Tauro (IT)

    - o Port of Valencia, Port of Barcelona (SP)

    - o German Minister of Transportation (GE)

    - o French Minister of Transportation, by means of CEREMA (FR)

    - o Port of Szczecin and Morsky (PL)

    - o Eurocontrol

References:

[1]   SOLAS XI-II
[2]   ISPS Code – part A and B
[3]   Directive 2005/65/EC of the European Parliament and of the Council of 26 October 2005 on enhancing port security – OJ L 310, 25.11.2005, p. 2
[4]   Regulation (EC) No 725/2004 of the European Parliament and of the Council of 31 March 2004 on enhancing ship and port facility security - OJ L 129, 29.4.2004, p. 6
[5]   TAPS II