



# Port of Le Havre. protection against non-cooperative small craft

## SCOPE

The aim of port security is to detect threats of unlawful actions against ports and port facilities (terminals) in their role as an interface with ships engaged in international transport, and to take appropriate measures to prevent these threats and limit their impacts. The scope of this campaign is to assess operational contribution of RPAs in support to protection against non-cooperatives small crafts approaching the port areas. Migrant or activist semi-rigid inflatable boats, leisure boats with deliberate or undeliberate illicit behaviour, should be consider as non-cooperative crafts.

## PLANNING

- Campaign execution: 2023 Q2 (June 2023)

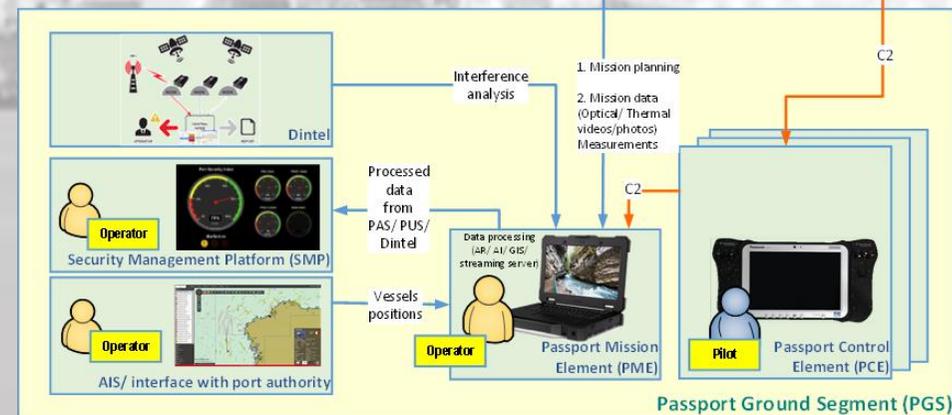
## PORT OF LE HAVRE

The port of Le Havre is part of HAROPA Port and its activity is mainly specialized in the transport of containers, motor vehicles, chemical materials, passengers, building materials, energy and agro-food materials and bulk. With nearly 4,400 ships to be received in 2020, including 1,835 container ships, the port's traffic amounts to 55 MT. The port area covers 77,700 hectares and 35 km of quays dedicated to specific uses. The port has an oil terminal in Antifer, about 20 km from the port. Since June 1st 2021, the ports of Le Havre, Rouen and Paris, have now merged to form a single port and represent the 1st port in France.

## PASSPORT ARCHITECTURE CONFIGURATION

PASSport configuration for this campaign is composed by:

- One (1) fixed wing drone for long endurance missions for distant video monitoring
- One (1) rotary wing tethered drone equipped by optical camera for distant video monitoring
- One (1) rotary wing drone optical camera for distant video monitoring
- One (1) control segment (PCE) composed managing the fleet of drones
- One (1) mission center (PME) where both real time (video for situational awareness) and data for post-processing are collected, processed together with Copernicus, validated and published. PME also manages all mission phases, i. e. planning, acquisition, processing, validation, reporting.





# Port of Le Havre. protection against non-cooperative small craft

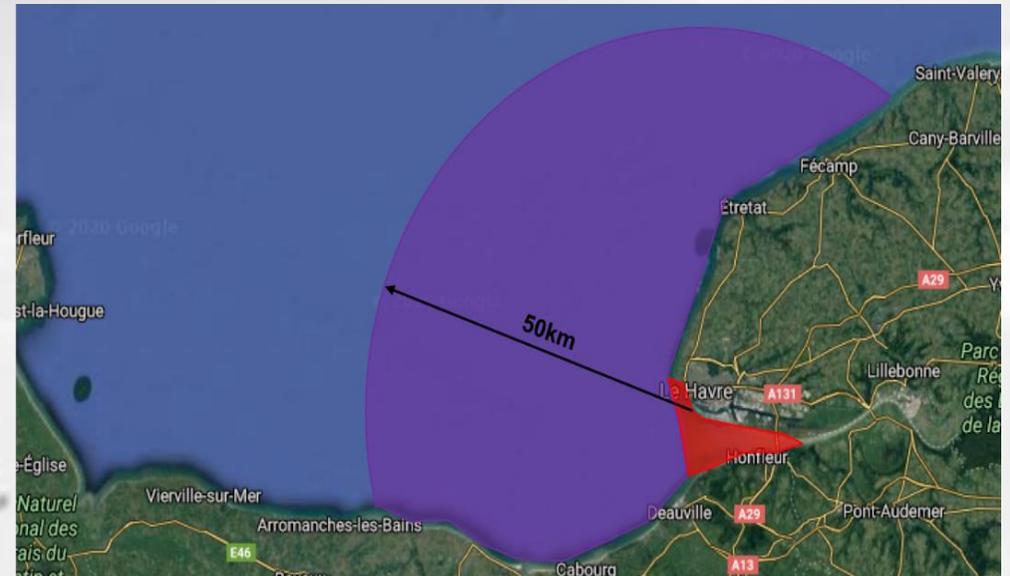
- One (1) Security Management Platform (SMP) used to trigger threats and activate relevant intervention procedures
- One (1) GNSS interference detection to check quality of GNSS signal
- Interface to already existing AIS systems

## THE PILOT: LE HAVRE and ANTIFER

The objective is to demonstrate in the case of ports such as Le Havre, how rotary wing fleet and fixed-wing RPAS can collaborate to ensure the surveillance of a port, its mooring area, and globally its vicinity (up to about 50km) for the detection and localisation of non-cooperative crafts. The demonstration scenario will be based on the complementary use of rotary wing UAVs for performing automatic survey on predefined patterns 24/7 in the close vicinity of the port, and fixed-wings will ensure the surveillance at a larger scale (such as mooring areas, approach channels, pilot waters). In addition, scenarios of deployment on order from the port authority in order to check an abnormal situation, in complement to existing port sensors (Vessel Traffic Services system including radars, AIS, optical) and help for decision-making processes

### DIFFUSE THREAT

**Context:** In the event of a major risk or knowledge of a proven but undetermined threat (risk of attack, for example), the port could mobilize all its surveillance resources to counter the threat.





# Port of Le Havre. protection against non-cooperative small craft

**Proposal** to use drones to carry out surveillance and active watch patrols. Mobilized means could be fixed-wing drone for patrols in ZRT, rotating wing drone for patrols near the port, tethered drone to activate a lookout point to extend the port's detection capabilities. They shall be mobilized simultaneously but on different geographical areas. Payload capabilities could be visible and IR wavelength.

## SPECIFIC THREAT

**Context:** In case of reception or movement of a ship carrying a particularly dangerous cargo for example, the port could mobilize all its surveillance means to counter the risk.

**Proposal** to deploy drones to secure the approach of the vessel. It means to use fixed-wing drone for patrolling the ship's trajectory offshore, rotating wing drone for patrol accompanying the trajectory of the ship to take over from the fixed wing and tethered drone positioned near the ship at dockside to secure the environment. The use of a cooperative vessel will be needed. Payload capabilities could be visible and IR wavelength.

## POTENTIAL THREAT AND TARGET SEARCH

**Context:** In case of presence of an unknown radar echo or abnormal behaviour.

**Proposal** is to use drones over the zone and have a visual for decision making. Mobilized means can be fixed wing drone to have a wide view and to locate the vessel, rotating wing drone to identify the ship, to show that it is the object of particular attention. Tethered drone can also be deployed on the land side of the port in case of intrusion. The use of a small vessel simulating a non-cooperative vessel is needed (pilot boat, semi-rigid). Means will be deployed simultaneously on the same geographical area. Payload capabilities could be visible and IR wavelength.

