UnderSec

Underwater Security

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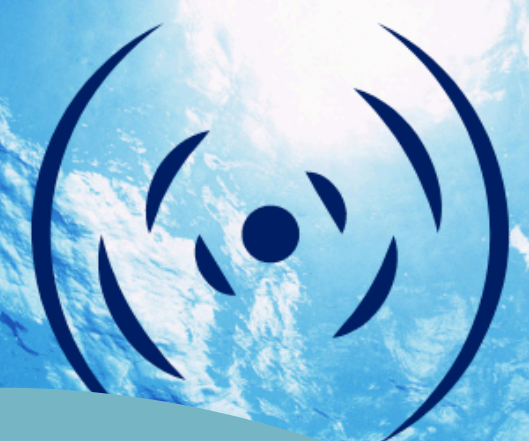
UnderSec Consortium is a multidisciplinary group composed of 22 partners from 11 different countries

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Protecting ships and maritime infrastructures against illegal acts

Funded by European Union
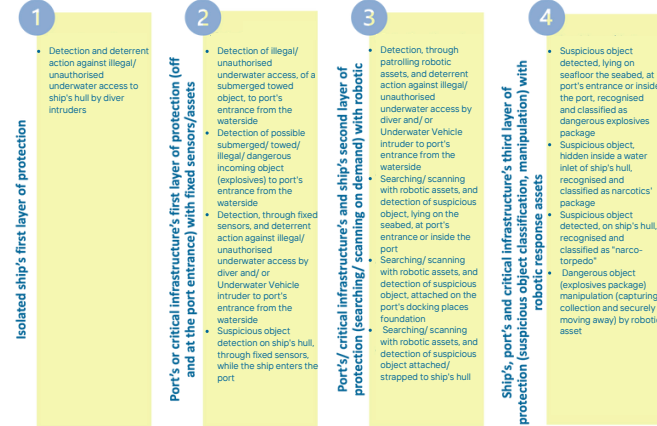
The project in brief

Ships, maritime infrastructures and the whole marine ecosystem need to be sufficiently protected against possible illegal acts, by also fostering underwater security and assuring secure navigation. UnderSec is dedicated to enhancing maritime and underwater security. The project involves a consortium of experts, research institutions, and technology partners, aiming to develop a comprehensive underwater security solution.

The objective

UnderSec aims to develop a comprehensive underwater security system for maritime assets and infrastructures using multimodal sensors and robotic assets.

The Pilots

1 — Isolated ship's first layer of protection
- Detection and deterrent action against illegal/ unauthorised underwater access to ship's hull by diver intruders

2 — Port's or critical infrastructure's first layer of protection (off and at the port entrance) with fixed sensors/assets
- Detection of illegal/ unauthorised underwater access, of a submerged towed object, to port's entrance from the waterside
- Detection of possible submerged/ towed/ illegal/ dangerous incoming object (explosives) to port's entrance from the waterside
- Detection, through fixed sensors, and deterrent action against illegal/ unauthorised underwater access by diver and/ or Underwater Vehicle intruder to port's entrance from the waterside
- Suspicious object detection on ship's hull, through fixed sensors, while the ship enters the port

3 — Port's/ critical infrastructure's and ship's second layer of protection (searching/ scanning on demand) with robotic
- Detection, through patrolling robotic assets, and deterrent action against illegal/ unauthorised underwater access by diver and/ or Underwater Vehicle intruder to port's entrance from the waterside
- Searching/ scanning with robotic assets, and detection of suspicious object, lying on the seabed, at port's entrance or inside the port
- Searching/ scanning with robotic assets, and detection of suspicious object, attached on the port's docking places foundation
- Searching/ scanning with robotic assets, and detection of suspicious object attached/ strapped to ship's hull

4 — Ship's, port's and critical infrastructure's third layer of protection (suspicious object classification, manipulation) with robotic response assets
- Suspicious object detected, lying on seafloor the seabed, at port's entrance or inside the port, recognised and classified as dangerous explosives package
- Suspicious object, hidden inside a water inlet of ship's hull, recognised and classified as narcotics' package
- Suspicious object detected, on ship's hull, recognised and classified as "narco-torpedo"
- Dangerous object (explosives package) manipulation (capturing, collection and securely moving away) by robotic asset

UnderSec relies on four Real-life Pilot Use Cases (PUC) scenarios that will be the basis for the demonstration, testing and evaluation of all UnderSec system's capabilities and capacities.

The technical framework

The UnderSec system employs a layers-based approach, comprising "Horizontal" Layers of Protection Technologies and "Logical" Layers of Data Management and Exploitation. The former organizes components for specific underwater security tasks, while the latter ensures proper data management, governance, analysis, and exploitation.