

STARTING THE LAST YEAR

At the outset of its final year, the ISOLA project encountered scheduling delays in pilot scheduling, largely due to the lingering impacts of COVID-19. Despite these hurdles, the consortium, led by the management partners Airbus and CERN, stayed committed to moving forward, albeit with some adjustments to their timelines.

The partners concentrated their efforts on addressing these scheduling challenges, working closely to refine the ISOLA system's components, enhance integration protocols, and bolster the technology's resilience and efficiency.

With a strong focus on overcoming these temporary setbacks, the project team is now optimistic about regaining momentum. The ongoing work on system integration and comprehensive testing ensures that the ISOLA system will adhere to the stringent standards necessary for its successful operational deployment, aiming to significantly improve maritime safety and security on a global scale.



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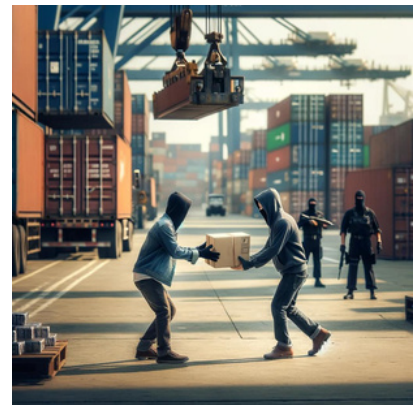
MARITIME CHALLENGES

The Battle Against Smuggling

The maritime industry, pivotal for global commerce, finds itself navigating through turbulent waters teeming with the undercurrents of smuggling and trafficking. Vessels, often hailed as the lifelines of international trade, are at risk of being misused as channels for the transport of illegal commodities like drugs, weapons, and contraband. The scenario darkens with ships also being implicated in human trafficking and illegal immigration, presenting grave security and humanitarian dilemmas.

The vast expanse of the maritime domain, coupled with its operational complexities and areas of lax surveillance, presents an ideal backdrop for such illicit undertakings. Smugglers and traffickers, leveraging the enormity and obscurity of the seas, employ intricate methods to mask their operations, significantly hampering the efforts of enforcement bodies. The repercussions of these activities extend beyond the immediate threats to national security, deeply impacting the lives and well-being of individuals ensnared within these perilous networks.

A particularly challenging arena within this context is passenger shipping. Passenger vessels, with their large human cargoes and their belongings, inadvertently offer smugglers myriad opportunities to conceal and transport contraband. The diversity of passengers and the sheer volume of luggage create a complex environment that is particularly susceptible to exploitation for smuggling operations. From narcotics



and firearms to priceless artefacts and species on the brink of extinction, the range of illicit items smuggled is as vast as it is alarming. This not only endangers those on board but also poses significant legal and regulatory challenges.

Fortify Maritime Security Against Smuggling

Smuggling continues to be a significant threat to maritime security, impacting global trade and the safety of sea routes. The ISOLA system is addressing this challenge through the integration of advanced technologies designed to enhance the security of maritime shipping lanes.

ISOLA's system employs sophisticated surveillance capabilities to conduct continuous monitoring of vessel activities, identifying any suspicious behaviour that could indicate smuggling attempts. Its real-time risk assessment tools utilise data from a myriad of sensors and modules, enabling the early detection and interception of illicit cargo, thus playing a crucial role in mitigating the risks posed by smuggling operations.

A pivotal aspect of ISOLA's approach to combating smuggling lies in its advanced chemical detection technology. The system is equipped with cutting-edge sensors capable of rapidly identifying concealed hazardous substances aboard vessels. This capability is vital for preventing potential health and environmental hazards that smuggled chemicals could pose.

Moreover, ISOLA's framework facilitates seamless collaboration among maritime stakeholders, improving the sharing of information and coordination of responses to smuggling incidents. This collaborative aspect is crucial for ensuring a unified front against the complex challenge of maritime smuggling.

By weaving together these technological advancements, ISOLA not only strengthens maritime security but also plays a crucial role in safeguarding global trade routes from the pervasive threat of smuggling. The system's proactive measures and collaborative framework signify a significant advancement in the ongoing battle against smuggling, promising to enhance the safety and security of maritime operations well into the future.

ISOLA TOOL SPOTLIGHT:

UAV Swarm Automation

A platform for the automatic piloting of a swarm of drones was developed. A general-purpose platform is devised; in the context of ISOLA, it is mainly used to enhance security and safety on passenger ship, specifically being tested in a scenario in which a person tries to board the ship illegally.

The drones platform main input comes from the path planning tool which can produce multiple paths to be handled by a swarm.



The main output is geared towards a multi-media analysis tool which analyses the incoming imagery and metadata invoking the corresponding AI model. The drone platform enables the easy configuration, launch and monitoring of UAV(s) related activities to support situational overview of the ship using UAV-onboard sensors. Once the drones platform receives a corresponding path(s) to be covered the UAV(s) autonomously scans the designated area, including the capturing and transmission of images and other sensor data in real-time. The flight plan can be made dynamic such that if specific points of interest are discovered, the flight plan may be changed automatically to pay special attention to the points of interest discovered. Moreover. In the future the flight plan of a swarm of drones shall take into consideration the individual capabilities of each drone.

The service is built in a UAV agnostic manner such that different kinds of drones may be used based on specific requirements.