

## YEAR 2 MILESTONE: ISOLA Concludes Second Project Year

As the ISOLA project moved from its midpoint to the two-year milestone, it embarked on a vital integration and testing phase. This period was dedicated to weaving the disparate elements of the ISOLA system into a unified operational tool. The team prioritised the smooth integration of advanced surveillance, data analytics, and user interface components to craft a user-friendly and efficient maritime security solution.

A significant milestone during this phase was the site survey and technical integration conducted in May 2022. By simulating real-world conditions, the project team could assess the system's effectiveness and resilience, pinpointing areas for improvement. This comprehensive review led to targeted refinements that enhanced the system's overall functionality.

The project's collaborative spirit was further solidified during an in-person meeting of consortium members, marking a pivotal moment for teamwork and direct engagement. Experts from various fields joined forces to navigate the intricate challenges that arose during system integration, ensuring a cohesive approach to problem-solving.

As ISOLA heads into its concluding year, the emphasis shifts to preparing the system for real-world deployment, adhering to stringent operational standards. As the ISOLA project enters its final phase, it's poised to significantly enhance global maritime security. This reflects the effectiveness of international cooperation in addressing maritime challenges and underscores the project's role in promoting safer seas.



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# MARITIME CHALLENGES

## Stowaways in the Maritime Industry

The maritime industry continually grapples with various challenges, among which the issue of stowaways stands out due to its potential for danger and complexity. Unauthorised individuals seeking to migrate illegally by boarding vessels not only pose safety risks but also create legal complications for crews and shipping companies. These situations can quickly escalate, causing operational disruptions and requiring immediate, coordinated responses.

One notable example occurred in October 2020 aboard the Nave Andromeda, a Liberian-registered oil tanker en route to Southampton, England. The crew discovered seven stowaways who became threatening, endangering everyone on board. The situation intensified, necessitating the intervention of British special forces, who successfully regained control of the tanker without any injuries. This incident vividly illustrated the severe security threats posed by stowaways and underscored the necessity for preparedness and decisive action in such high-stakes scenarios.

This incident highlights the critical need for vigilance and stringent security measures within the maritime sector. Shipping companies are urged to implement comprehensive inspections, provide extensive crew training, and foster cooperation with port authorities to effectively mitigate stowaway risks. Prioritising the safety of crew members and the security of cargo is essential as the industry continues to navigate the intricate dynamics of international shipping and migration.

## Stowaway Security System in ISOLA



The ISOLA project introduces a cutting-edge security system aimed at bolstering the safety of passenger ships, notably in preventing stowaway incidents. At its core is a sophisticated tool that dynamically assesses risk levels for potential security breaches, including unauthorised boardings.

This advanced tool harnesses data from the ship's existing systems and an array of sensors and modules installed as part of the ISOLA initiative, processing this data to issue real-time alerts on potential threats. Its foundation in Bayesian probabilistic models enables the ISOLA system to conduct vigilant surveillance and prompt threat detection, greatly improving the accuracy and speed of situational assessments.

Particularly in dealing with stowaways, the system's capability to detect early signs of unauthorised entry is invaluable. It empowers the crew to quickly recognize and address such attempts, facilitating rapid and well-informed actions. This proactive stance not only reduces human error but also shortens the response time to security threats, thereby safeguarding both crew and passengers.

## **ISOLA TOOL SPOTLIGHT: Enhancing Cruise Ship Boarding Security with Two-Factor Authentication and GDPR Compliance**

In today's interconnected world, ensuring the safety and security of passengers aboard cruise ships is paramount. Traditional boarding card systems, long relied upon for access control, are proving to be inadequate in addressing modern security challenges. Recognizing this, ISOLA proposes a cutting-edge solution: two-factor authentication that not only enhances security but also ensures compliance with the GDPR.

Access control serves as the linchpin of security, whether in physical or digital realms. For cruise ships, where stowaways may threaten the security of passengers as well as the security of the crew, robust access control measures are indispensable. Yet, conventional boarding cards fall short on multiple fronts. They are prone to loss or theft, causing delays during boarding and posing security risks. Moreover, visually verifying passengers' identities is neither reliable nor efficient.

Enter two-factor authentication—a multifaceted approach that combines the convenience of hardware tokens with the reliability of biometrics. By leveraging what passengers have (hardware tokens) and what they are (biometric data), this approach offers a formidable defence against unauthorised access.

Biometrics, once seen as futuristic, are now commonplace and can be seamlessly integrated into the boarding process. With advancements in technology, biometric recognition has become contactless, alleviating concerns about hygiene and convenience.

Crucially, the proposed system aligns with GDPR regulations, safeguarding passengers' personal data. Rather than relying on a centralised database—a potential GDPR violation—the solution utilises decentralised storage, with each passenger carrying their biometric data on a secure hardware token. This ensures that sensitive information remains in the hands of its rightful owner, minimising the risk of data breaches.

Furthermore, measures such as encryption and cancellable biometrics bolster security, providing an additional layer of protection against unauthorised access. In the event of a lost or stolen hardware token, immediate invalidation of its contents prevents misuse.

In conclusion, ISOLA's innovative approach to cruise ship boarding security addresses the shortcomings of traditional systems while adhering to GDPR guidelines. By embracing two-factor authentication and prioritising passenger safety and privacy, cruise operators can embark on a journey towards safer and more efficient voyages.