



## Use Case:

AI and video analytics enhance operational efficiencies and security for the shipping industry

convergent®

### Background

The shipping industry has long pioneered technological advancements to drive efficiency, sustainability, and safety. And in recent years, groundbreaking industry innovations have truly reshaped the way goods traverse the global waters. From autonomous vessels to smart ports and blockchain-based supply chains, technology has paved the way to a more interconnected, efficient, and sustainable future for commercial shipping. The integration of AI and video analytics, however, has yet to be fully exploited.

### The objective

Despite the extensive use of surveillance and security platforms across vessels of many sizes, ship owners and operators have fallen short of leveraging the true potential of their security infrastructure for enhancing efficiency and achieving a favorable commercial return on investment (ROI). The means are at their disposal. The essential elements of a security system, including open platform IP cameras, networking components, servers & and workstations, open platform strobes, speakers, and monitors can all work in tandem to provide the foundation for advanced analytics and AI. Industry players simply need help taking the next step toward bettering their business via this technology.

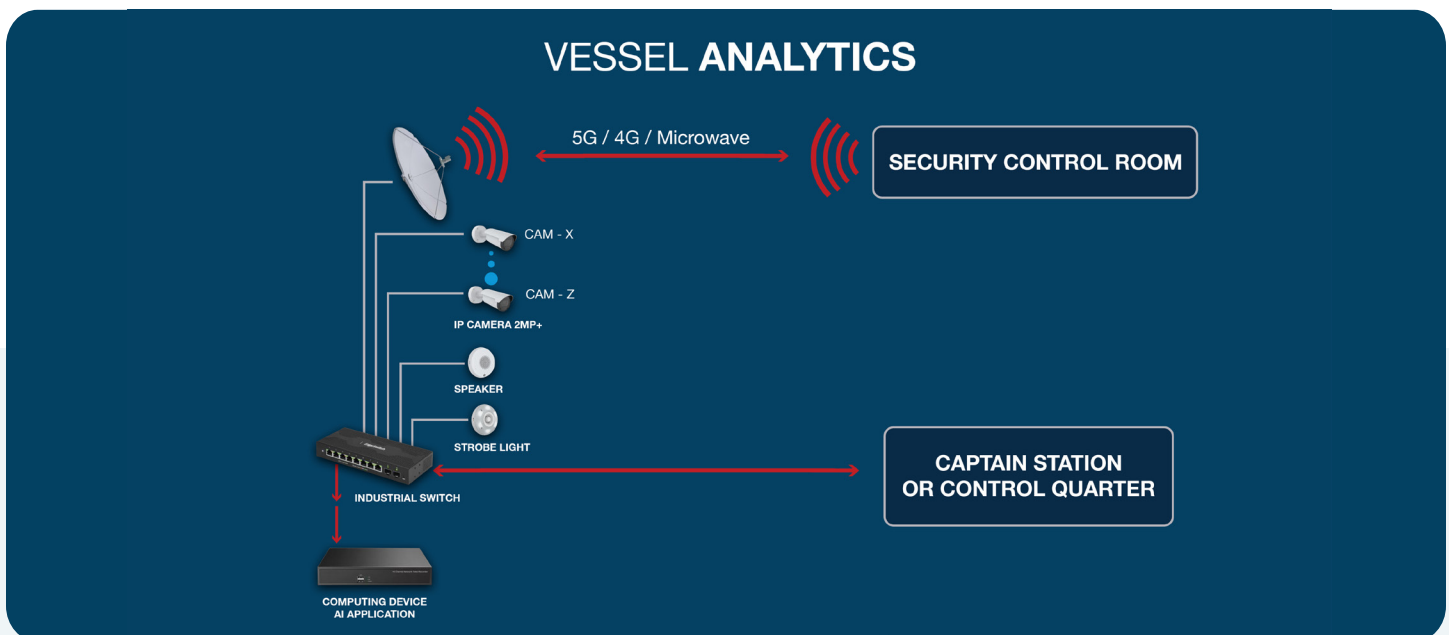
### The solution

Convergent's Smart Vessel solution represents a pioneering advancement in the shipping industry, capitalizing on cutting-edge technology to enhance both security and operational efficiency. Artificial intelligence, machine learning, and intelligent surveillance are leveraged to customize AI analytics software that continually scans and detects vital vessel events through strategically positioned cameras, activating timely audio alerts on network speakers and visual alarms on the captain's bridge.

The technology processes IP camera video and extracts low-bandwidth metadata, facilitating a comprehensive digital understanding of the vessel's surroundings. Designed to be vendor-agnostic and open-source, it seamlessly integrates with varying VMS brands, camera brands, or processing equipment brands. Whether operating as on-vessel independent systems, interlinked solution architectures between vessels and land-based command and control, or in a hybrid cloud model, the AI-enabled software solutions offer a layer that comprehends metadata, objects, movements, locations, and more.

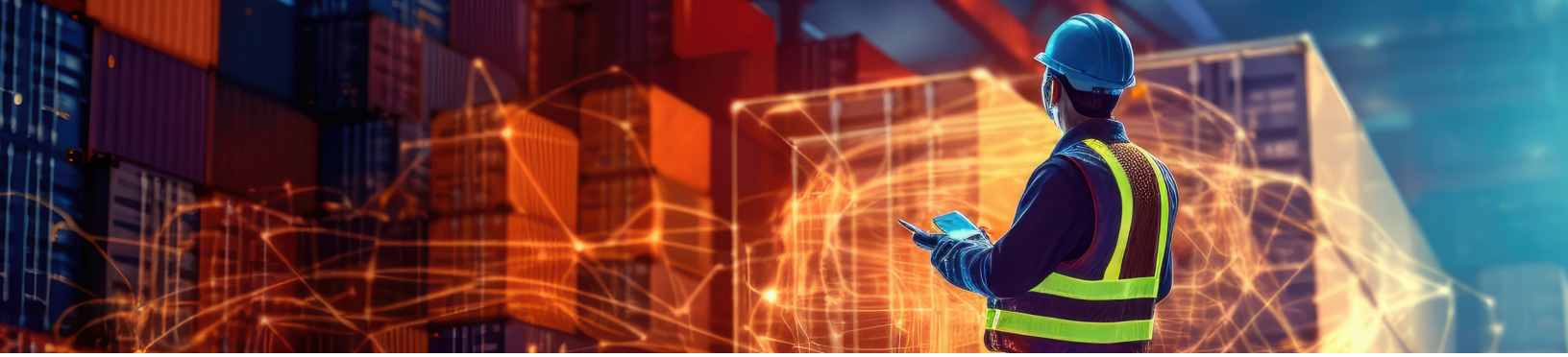
Convergent provides a software solutions layer powered by AI and analytics, delivering live alerts, conducting forensic analysis, and driving operational enhancements. These advancements have a direct impact on safety, efficiency, and profitability within the shipping industry, aligning with the mission to integrate AI-enabled software and hardware solutions.

### Solution deployment would look something like this:



### Benefits are comprehensive and include:

- 1. Real-time threat detection:** The system employs AI algorithms to continuously monitor live video feeds from open platform IP cameras. This enables real-time threat detection, reduces response times, and enhances security. It can detect unauthorized personnel attempting to board the ship, and alert the crew promptly.
- 2. Predictive maintenance:** By analyzing video data, the Convergent solution can predict maintenance needs for critical ship components, preventing downtime and costly repairs. It can detect wear and tear on crucial engine components, ensuring timely maintenance.
- 3. Cargo monitoring:** Advanced analytics provide insights into cargo conditions, ensuring the safe transport of goods while minimizing losses due to spoilage or damage. This is particularly vital for perishable cargo, like food and pharmaceuticals, where maintaining the right temperature and conditions is crucial.



**4. Fuel efficiency:** AI algorithms optimize ship routes based on weather conditions, traffic, and fuel consumption, leading to significant fuel savings and reduced carbon emissions. The system can adapt routes in real-time, considering factors like weather patterns and traffic congestion, ensuring efficient journeys.

**5. Enhanced compliance:** The system ensures compliance with international maritime regulations by automatically documenting and reporting security incidents. It maintains detailed records of security events and provides the necessary documentation for regulatory audits, simplifying compliance efforts.

**6. Improved employee safety:** The system enhances on-board employee safety by continuously monitoring for potential trip and fall hazards, promptly alerting the crew to prevent accidents. Furthermore, it incorporates a man overboard protocol, rapidly identifying such incidents and initiating immediate response measures to safeguard the well-being of employees during maritime operations.

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### For more information:

For more information about Convergent's Vessel Analytics Solution and other AI/Computer Vision solutions, check out the Digital Transformation team here: [Digital Transformation - Convergent](#) and request a call.

### About Convergent

Convergent is a \$2.3 billion global, industry-leading systems integrator that designs, installs, and services electronic security, cybersecurity, fire and life safety, building automation, and audio-visual systems. Moreover, innovation is at the very heart of the business, and new technologies are continuously identified and applied to the benefit of our customer base. Listed as the #1 systems integrator in SDM Magazine's Top Systems Integrators Report for the past 6 years, Convergent leads with close to 10,000