



Case Study

STATE-OF-THE-ART SMART VESSELS SOLUTION FOR BETTER MARINE VESSEL OPERATIONS

The AI and ML-powered Smart Vessels System sets up ships and sea vessels in a proactive mode, offering real-time surveillance, enhanced safety and security, and powerful reporting.



We believe the strongest tool we have is the competence of our team and their ability to adopt and deploy change-making technologies in market faster than anyone else in the region.

THE INDUSTRY – OIL AND GAS

The demand for oil and gas continues to grow strong globally, steering global macroeconomic and geopolitical situations. Technological breakthroughs, coupled with the rising exploration interests of different nations, makes the Oil & Gas industry a highly sought-after and lucrative market. To deal with challenges concerning oil price dynamics and supply-demand imbalances, firms in the sector need to rely on Intelligent surveillance, Artificial Intelligence, and Machine Learning to harness real-time data. Gathering and analysing data help streamline operations, reduce costs, and ensure HSE practices.

THE PROBLEM

The existing offshore support systems in vessels were less efficient on a number of fronts -- safety, security, surveillance, decision-making, and communication. Furthermore, the absence of real-time data presented major threats, such as the inability to discern weather patterns, inadequate situational awareness, and ineffective monitoring of crew onboard. Finally, sea vessels are accident-prone, especially in events such as poor visibility or personnel falling overboard. These problems present cumulative challenges to the entire system, such as inaccurate data, poor efficiency, lack of safety, etc., which translate to limited operating capability for firms in the oil and gas industry.

THE SOLUTION

MVP Tech's Smart Vessel Solution harnesses the power of the latest technological advancements like AI (Artificial Intelligence), Machine Learning (ML), and Intelligent surveillance. The system is tailor-made to continuously scan, analyse, detect, identify, and prevent incidents with the help of multiple, well-placed, intelligent cameras, sensors, and audio network speakers.

Utilizing our AI and Engineering capabilities, our team of AI scientists and software engineers developed a custom AI analytics software, where the system will be able to detect multiple key events or threats happening simultaneously using intelligent cameras, generate an audible warning alarm via network audio speakers and visual alarms displayed through the Video Management Software on the Monitors in the captain's bridge.

The solution is also capable of ensuring proper HSE practices; it significantly improves operational efficiency and safety by creating optimal vessel conditions.

THE APPLICATION

MVP Tech's Smart Vessel Solution finds its application in a number of offshore and onshore vessel activities:



- **Surveillance**

The solution improves surveillance comprehensively with video management systems to cover the entire vessel, including restricted areas and exit points. The cameras are equipped with

tripwire built-in analytics, where a virtual line would be drawn across the threshold point. The system automatically generates an alarm when it detects crossing of that line.

- **Safety**

Using ML, the solution eliminates manual personnel checks by detecting PPE and HSE violations, ensuring crew safety. Furthermore, classifying the sea swells automatically using an inclinometer sensor, the AI-powered system is able to detect periodical movement of a ship at any direction and classify the condition of the sea accordingly based on a pre-defined threshold.

- **Detection**

With its continuous surveillance capabilities, the solution can detect, identify, and analyse any abnormal actions, triggering alarms and alerts to the control team for prompt mitigation. Thus, the trained AI analytics software using ML, can detect, classify, and alert for any slip and fall actions.

- **Visibility**

Incorporating a high-powered image recognition system, the solution improves visibility by identifying objects in the surroundings. In the case of detecting man overboard, with thermal cameras covering the vessel sides and stern area, the AI analytics is trained to pick up and detect movements out of the vessel to avoid nuisance reoccurring alarms. Furthermore, it plots the GPS positioning of such events.

- **Communication**

The onshore command and control centres have access to real-time data during vessel movement in addition to all

onboard analytics, automatically store on the NVR (Network Video Recorder) and pushed into the central synchronization when the vessel is back on port via backend wireless communication system.

THE RESULT

MVP Tech's Smart Vessel Solution has eliminated challenges that reduce operational efficiency and safety. Notably, it has managed to be one step ahead of its competitors by achieving several critical results, which include:

- **Enhanced Health & Safety Practices**

The solution enhances decision-making capability (e.g., by analysing weather patterns), provides a safe working environment, and detects abnormal behaviour promptly.

- **Real-time access & communication**

The solution minimizes uncertainty by providing real-time video access to the onshore command and control centre. The solution achieves this with an AI cloud system, a central repository for local video and data information on board. With real-time data, the centre can ensure vessel security and empower vessel operations with powerful analytics.

- **Reduction in costs**

The solution elevates the role of the onshore command and control centre as it is communicating and controlling multiple vessels. This brings about better decision-making,



ultimately reduces operating costs and leads to better utilization of resources.

- **Improved Navigation**

The built-in AI functionality helps in better detection of objects in the surrounding area. The solution assures intelligent surveillance by generating alarms and providing the quickest post-event analysis.

- **Automated Crew Safety Check**

The Smart Vessel Solution automatically detects PPE & HSE violations; it also detects security hazards concurrently throughout the operation.

- **Eliminating Accidents**

The solution is designed and developed to classify sea swells as Red, Yellow, or Green, with green indicating normal conditions, yellow indicating warning conditions,

and red indicating alarming conditions. Also, the Man Overboard Analytics Detection System monitors man overboard events and triggers immediate, actionable information to response personnel. Furthermore, the intelligent cameras can detect the exact GPS location of the fall, mitigating risks even in unfavourable climatic conditions.

This solution has demonstrated not only measurable benefits but also an excellent ROI for our existing customers.

VENDORS



AI STACK

YOLO Detection, C-Sharp, Central Tracker

From the beginning, our founders sought to change the perception of system integration providers, by creating a company with a different approach and a strong engineering focus at its core. Unchanged since our formation in 2003, this guiding principle is the visible thread woven throughout the company's culture and operations, setting us apart and influencing how we interact with our clients, vendors and colleagues.

We are engineering driven. We are MVP Tech.

For more information on how MVP Tech is driving the future of Security, IT Infrastructure and AI Software, please contact us.

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