

YOUR SHIP'S GUARDIAN IN THE DIGITAL AGE



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AQUASYNC INNOVATION (SINGAPORE) PTE. LTD.

**Ship-Shore
Informatization and
Oceansite Platform
Integrated Solution**



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Ship-Shore Informatization and Oceansite Platform Integrated Solution

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YOUR SHIP'S GUARDIAN IN THE DIGITAL AGE

Company Introduction

1.1 Company Profile

1.2 Global Service Network

1.3 Relevant Honors and Certifications

PART ONE

1.1 Company Profile

AquaSync Innovation (hereinafter referred to as ASI) provides a full package of solutions for comprehensive automation, intelligence, integrated ship-shore information and ship cyber security etc. in marine and offshore industries through cutting-edge technology, empowers the global maritime industry. Our advanced solutions ensure safe, reliable, efficient performance and promote the rapid sustainable development of the maritime industry's digitalization process.

ASI has obtained the **DNV-issued ISO 9001** Quality Management System, **ISO/IEC 27001** Information Security Management System, **ISO/IEC 20000-1** Information Technology Service Management System certificates, and the **ISO/IEC 17025** Marine Cybersecurity Laboratory Test Capability Recognition.



Integrated Gauging
Monitoring-Alarm and
Controlling System



Informatization Integrated
Solution



Intelligent ship system



Ship-Shore Fleet
Management System

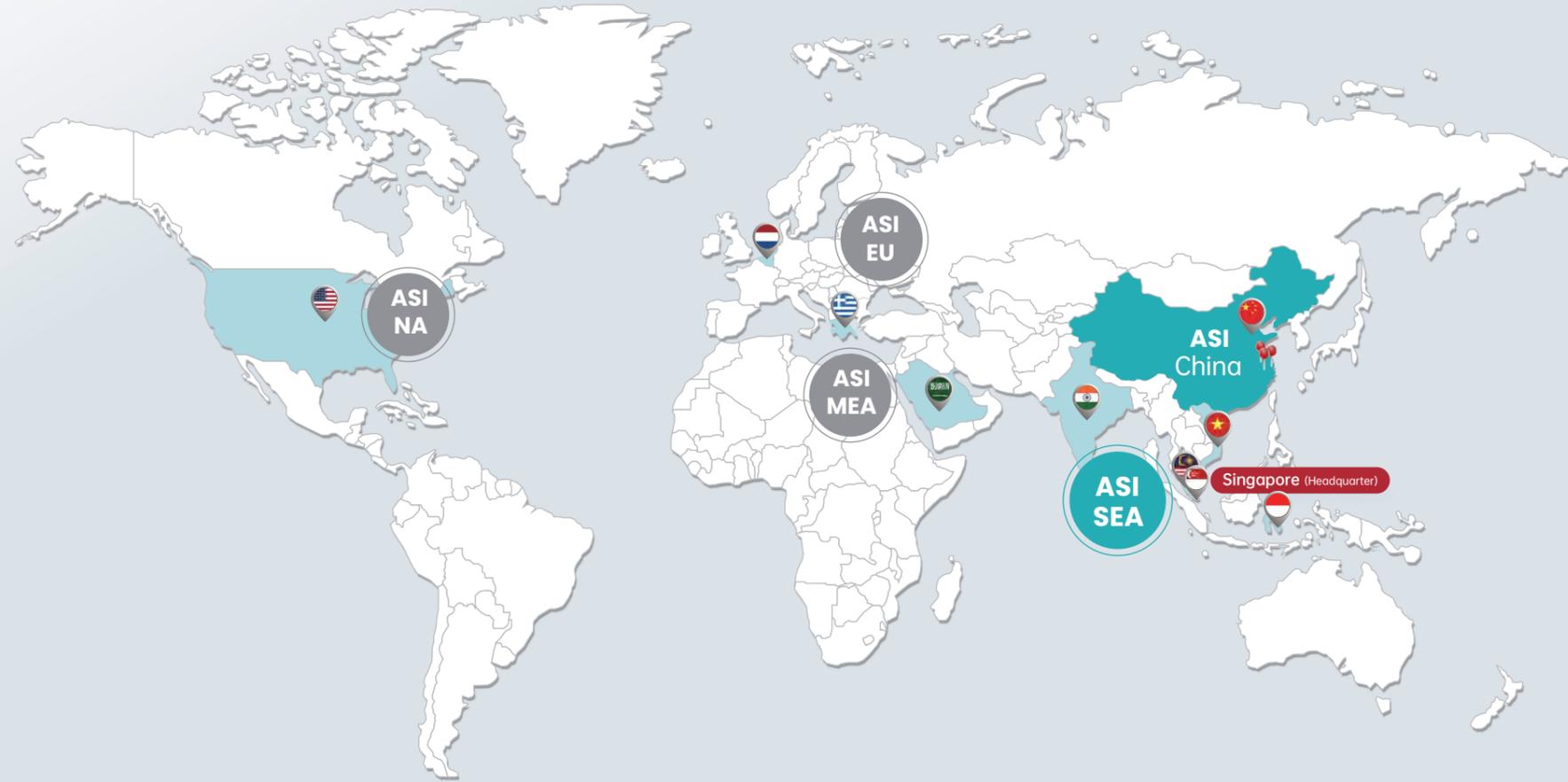


Ship Cybersecurity Solutions



Sensor Transmitters,
Valves, Flow Meters and
Other Underlying Hardware

1.2 Global Presence & Headquarters Map



ASI China Hangzhou, Zhejiang Wuxi, Jiangsu Province Shanghai	ASI SEA Singapore Vietnam India Indonesia Malaysia	ASI EU Netherlands Greece	ASI MEA Saudi Arabia	ASI NA America
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1.3 Relevant Honors and Certifications

ISO 9001:2015 Quality Management System Certification	ISO/IEC 27001:2022 Information security, cyber security and privacy protect information security management system requirements	ISO/IEC 20000-1:2018 Information Technology Service Management System

YOUR SHIP'S GUARDIAN IN THE DIGITAL AGE

Informatization Integrated Solution

- 2.1 Ship-Shore Information Integration System Topology
- 2.2 Ship LAN System
- 2.3 CCTV Network Topology Diagram
- 2.4 Maritime LEO Satellite Communication System
- 2.5 VSAT Satellite Communication System
- 2.6 5G Cellular Mobile Network
- 2.7 Network Information Cabinet



PART TWO

Ship LAN System



CCTV System



Maritime LEO Satellite Communication System



VSAT Satellite Communication System



5G Cellular Mobile Network

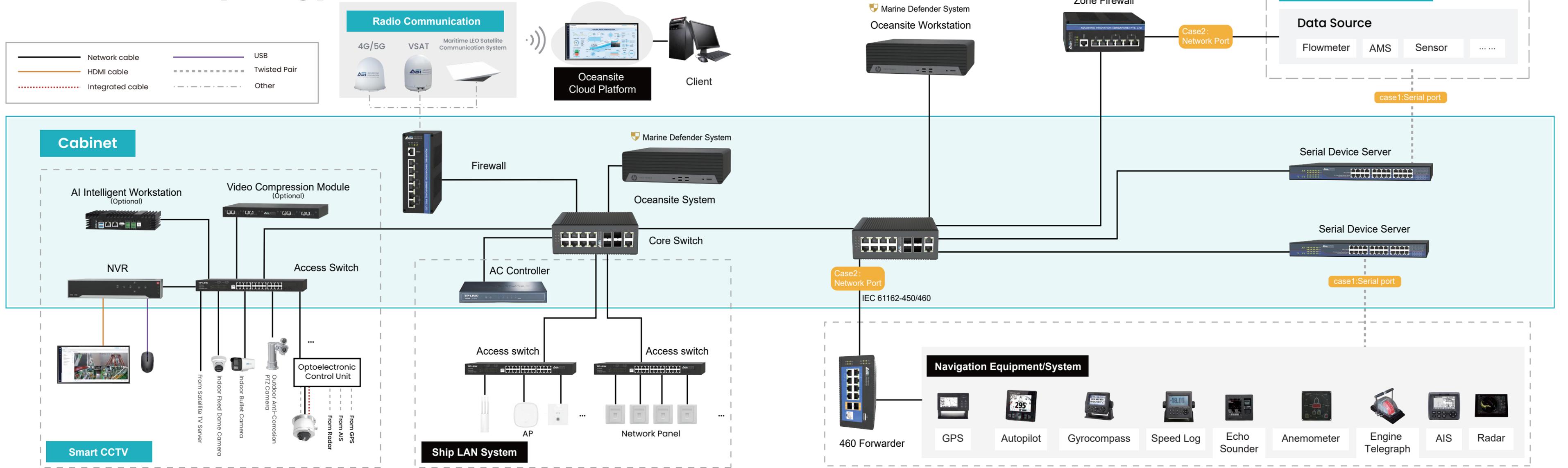


Network Information Cabinet

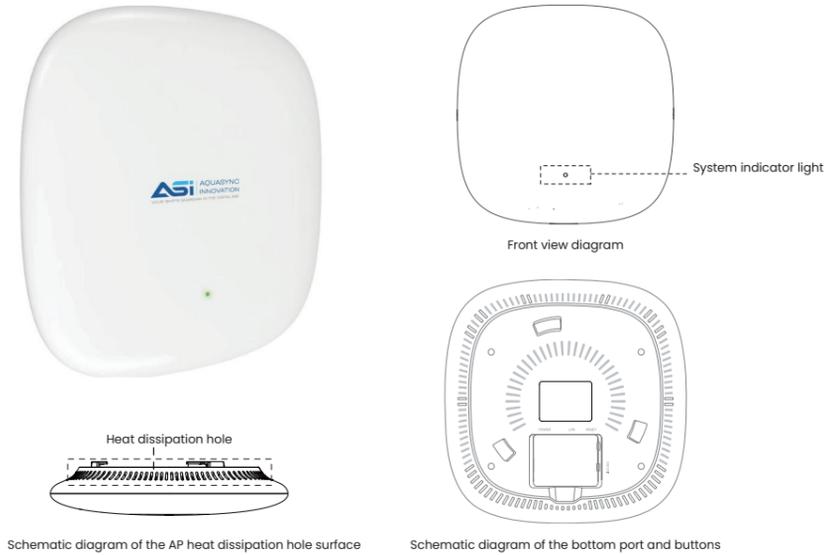


**We
Provide**

2.1 Network Topology



2.2 Ship LAN System-Indoor Ceiling-Mounted AP



Reset Button

The reset operation is as follows: While the AP is powered on, press and hold the RESET button until the system indicator light flashes, then release the button. The AP will automatically restore to factory settings and reboot. Once the reboot is complete, the system indicator light will remain steadily lit, indicating that the system has started normal operation.

DC Power Interface

When using DC power to supply the AP, you can connect a power adapter with a specification of 12V DC, 1A or higher.

FAT/FIT Mode Switch

This switch is used to switch the AP's operation mode. When set to FIT, the AP works in FIT AP mode and cannot be managed individually it must be managed through a TP-LINK wireless controller. When set to FAT, the AP works in FAT AP mode and can be managed individually via the web interface, but cannot be managed by a wireless controller. The AP will automatically reboot after mode switching.

RJ45 Port Specifications

Port	Quantity	Function
LAN	1	Connects to IEEE 802.3at/af PoE-powered devices

LED Indicator Definitions

Name	Status	Description	
System LED	Power-on Boot	Solid green during boot, then fast blinks twice when ready	
	AP	Solid on	System operating normally
		Flickering	In FIT mode: blinks every 2s when not connected to AC
		Off	System error or power failure

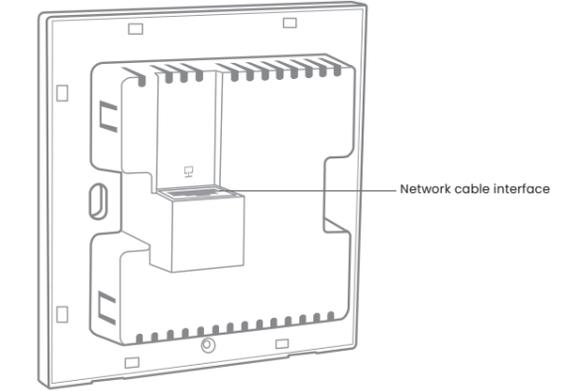
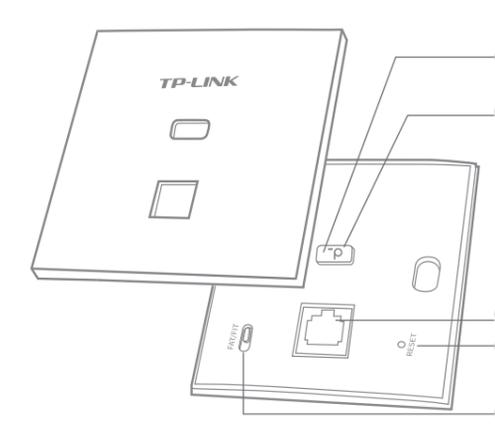
2.2 Ship LAN System-Wireless Access Point AP

Unit of external dimensions (mm)

Physical Pictures



Product Introduction



Note: Standard PoE power supply equipment that has obtained CCC certification and meets the requirements should be purchased for use in conjunction.

Installation Method	Direct installation to international 86-type network junction box
Dimensions	86×86×33mm (L×W×H)
Wireless Speed	• 2.4GHz: 300Mbps • 5GHz: 120Mbps
Ports	Front: 1× 10/100/1000Mbps RJ45 port Rear: 1× 10/100/1000Mbps RJ45 port
Antenna	Internal antenna
Indicators	1× System status LED
Buttons	1× RESET button 1× EasyMesh button 1× FAT/FIT mode toggle switch
Power Supply	Standard PoE powered
Power Consumption	• Max: 9.5W (PoE) • Idle: 3.45W (PoE)
Operating Environment	Temperature: 0°C to 40°C (operating) Humidity: 10% to 90% RH non-condensing Storage temperature: -40°C to 70°C Storage humidity: 5% to 90% RH non-condensing

Key press	Function description
EasyMesh Button	When the system is working normally, press the EasyMesh button to enter EasyMesh pairing mode.
LED Indicator Description	System Initialization: Solid on during startup, blinks 4 times after startup completes.
	After initialization Solid on: System is operating normally. Blinking: Blinks once per second during AP firmware upgrade or EasyMesh pairing. Off: System error, power failure, or LED is manually disabled.
	Ethernet Port or IPTV Port
Reset Button	Press and hold this button while powered on until the LED blinks, then release. In FIT mode, the AP will reboot and fetch the latest configuration from the AC. In FAT mode, the AP will restore factory settings and reboot.
FIT/FAT Mode Switch	Used to switch the AP operation mode. In FIT mode, the AP must be managed via a TP-LINK wireless controller (AC). In FAT mode, the AP can be managed individually via the web interface. Note: After switching modes, the AP will automatically reboot.

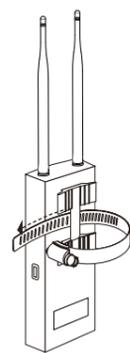
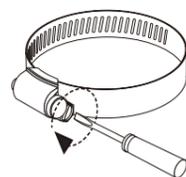
2.2 Ship LAN System-Wall-mounted AP



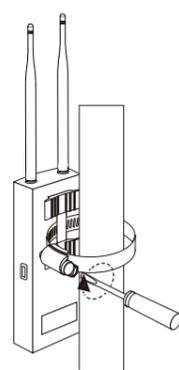
Model	TLAPI901G Diaphragm Version
Installation Method	Pole/Wall Mounting
Dimensions	209×95×43mm
Wireless Speed	2.4GHz Band: 600Mbps 5GHz Band: 1300Mbps
Ports	1 × 10/100/1000Mbps RJ45 Port 1 × 1000Mbps SFP Port (Industrial-grade optical module recommended, operating temp ≥85°C) 1 × DC Power Port
Antenna	External Dual-band Waterproof Detachable Omnidirectional Antenna
Antenna Coverage	360°
LED Indicator	1 × System LED
Buttons	1 × RESET Button 1 × FAT/FIT Mode Toggle Switch 1 × EasyMesh Button
Power Supply	53.5VDC/0.45A Passive PoE, 100M max power distance IEEE 802.3af/at Standard PoE 12-53.5V DC Input (Includes DC Power Adapter & PoE Injector)
Power Consumption	Max PoE Power: 15.5W PoE Idle Power: 5.2W
Management	FIT AP Mode: Managed by TP-LINK Wireless Controller (AC)

Installation Method 2: Pole Mounting

1. Use a flathead screwdriver to turn the screw on the stainless steel band counterclockwise until the band is fully loosened.



2. Insert the end of the stainless steel band through the small hole on the back of the wireless AP.



3. After determining the mounting position of the wireless AP on the pole, secure the AP firmly to the pole using the stainless steel band.

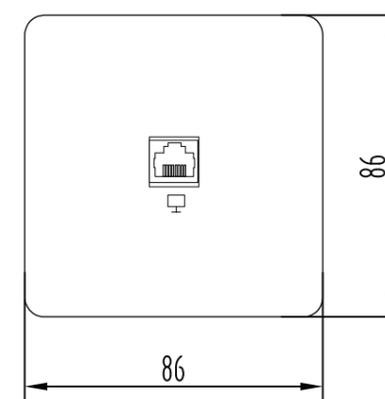
2.2 Ship LAN System-Indoor Network Faceplate with 86-type Back Box

Unit of external dimensions (mm)

Physical Pictures



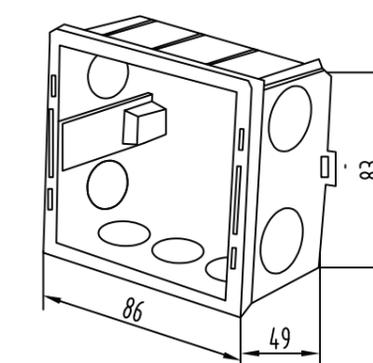
Front view diagram



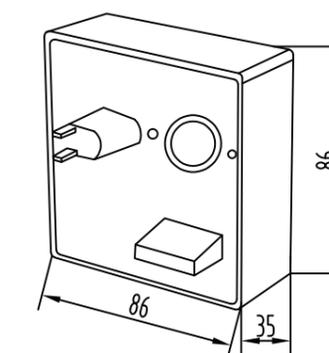
Performance Description

Performance and Specifications	Compliance Standard: JB/T 8593
	Features: Comes with an appearance patent certificate
	Compatibility: Supports installation of Cat.8/6A/6/5e/3 modules
Parameters and Characteristics:	Specifications: 1-port/2-port/4-port options available
	Style: Flat port
	Structure: Ports feature a spring-loaded door mechanism to protect modules and shield against dust and debris; panel adopts a modular design (dual-layer front and back panel) to conceal fixing screw holes
	Material: High-quality flame-retardant PC+ASB engineering material, compliant with UL 94 V-0
	Labeling: Transparent label windows above ports; accessories include embedded voice and data icons for easy label management and identification of data/voice ports
	Operating Temperature: -10 ~ +60°C

Product Introduction

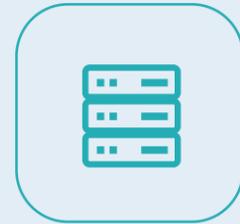


Recessed Junction Box

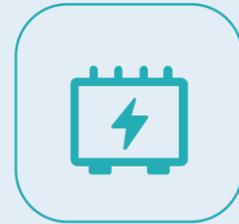


Surface-mounted Junction Box

2.2 Ship LAN System—Marine Network Core Switch



Layer 3 Switching



Redundant Power Input



Industrial Applications

Marine Network Core Switch – Key Features

Type: Layer 3 10-gigabit industrial Ethernet switch

Ports: 8x 10/100/1000M ports (PoE optional) + 4x 10G SFP+ slots

Power: Dual redundant power inputs

Protocols: MR-ring, STP/RSTP/MSTP, VLAN, QoS, IGMP Snooping

Advanced Features: Layer 3 routing, multicast routing, IPv6

Management: Console, Telnet, Web

Standards: IEEE 802.3/u/ab/x

Applications: Rail, intelligent transport, utility tunnels, power, energy, mining



Layer 3 Routing

Layer 3 routing enables inter-VLAN communication



High-Density Ports

High-density connectivity: Up to 8x Gigabit Ethernet ports/SFP slots, 4x embedded 10G Ethernet ports



Compact Design

Ultra-compact form factor with multiple mounting options



Rugged Housing

Rugged die-cast housing for harsh environments



Modular Expansion

Modular flexibility with 4-port expansion options



Tool-Less Design

Tool-less modular design for hot-swappable upgrades



Passive Backplane

Passive backplane minimizes maintenance requirements



Web Management

HTML5-based web UI delivers cross-platform management

2.2 Ship LAN System-WLAN Access Controller Manager



Auto Discovery



Bypass Mode



Central Config



Multi-Auth



Load Balance



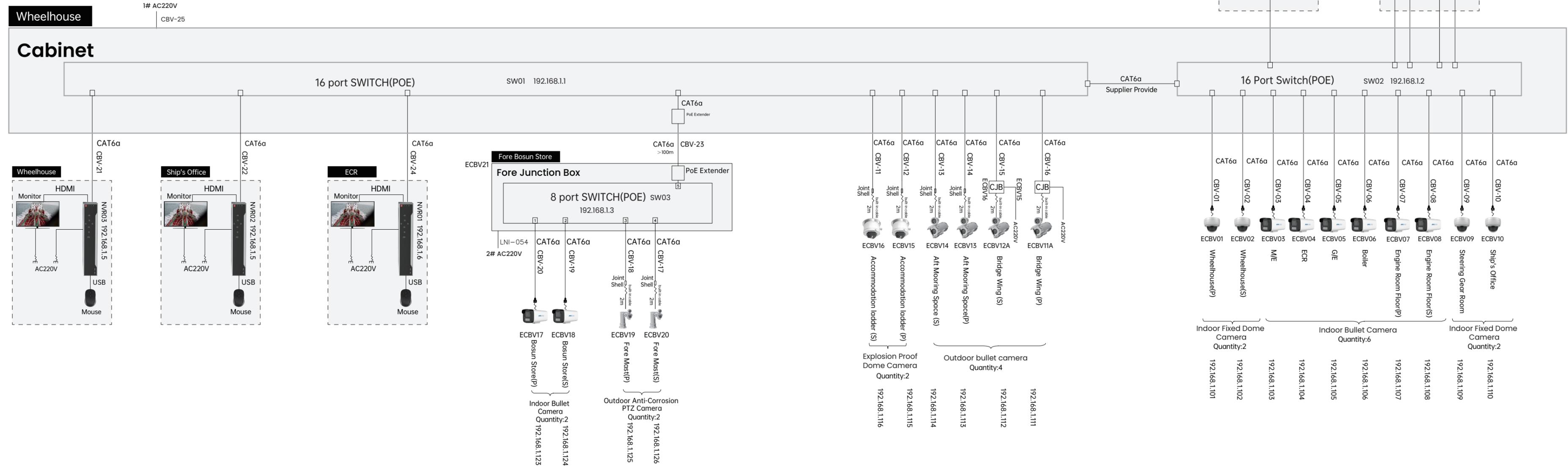
Weak Signal

- Automatically discover and centrally manage APs, with support for up to 100 APs
- AC is deployed in bypass mode, requiring no changes to the existing network architecture for easy deployment
- Centrally configure wireless networks, supporting SSID and Tag VLAN mapping
- Supports multiple user access authentication methods, including MAC authentication, Portal authentication, and WeChat Wi-Fi connection
- Supports AP load balancing to evenly distribute the number of wireless clients connected to APs
- Prohibits weak-signal clients from accessing and kicks out weak-signal clients
- Enables and disables AP LED lights



Interface	5 × 10/100Mbps RJ45 ports	5 × 10/100/1000Mbps RJ45 ports
Processor	Network-specific processor, 900MHz clock speed	
LED Indicators	Per port: Link/Act, 1000Mbps	Per device: PWR, SYS
Power Input	100-240V~50/60Hz	
Dimensions (L×W×H)	209mm x 126mm x 26mm	
Operating Environment	Operating temperature: 0℃~40℃ Storage temperature: -40℃~70℃	Operating humidity: 10%~90%RH non-condensing Storage humidity: 5%~90%RH non-condensing
Power Consumption	2.54W	
Max Manageable APs	100台 / 100 units	
Max Supported SSIDs	2.4GHz: 100 (supports Chinese SSID)	5GHz: 100 (supports Chinese SSID)
Wireless Settings	Unified wireless network configuration Supports wireless client isolation Supports individual AP transmit power adjustment	Supports enabling/disabling SSID broadcast Supports wireless client bandwidth limiting Supports 802.1Q VLAN
Wireless Security	64/128/152-bit WEP, WPA-PSK/WPA2-PSK, WPA/WPA2 security mechanisms	
Client List	Supported	
AP Management	AP Auto-Discovery AP Client Limit	AP Unified Configuration AP LED On/Off Control AP Remote Reboot
AC Operation Mode	Local Management External AC Management	
System Tools	Modify Management IP, AP IP Range, Admin Username/Password Factory Reset, Backup & Restore Configuration Reboot Wireless Controller, Batch AP Firmware Upgrade Supports Manual Time Setting & NTP Server Sync System Log Display & Remote Log Server Support	

2.3 CCTV Network Topology Diagram



2.3.1 Smart CCTV Technological Policies Reference

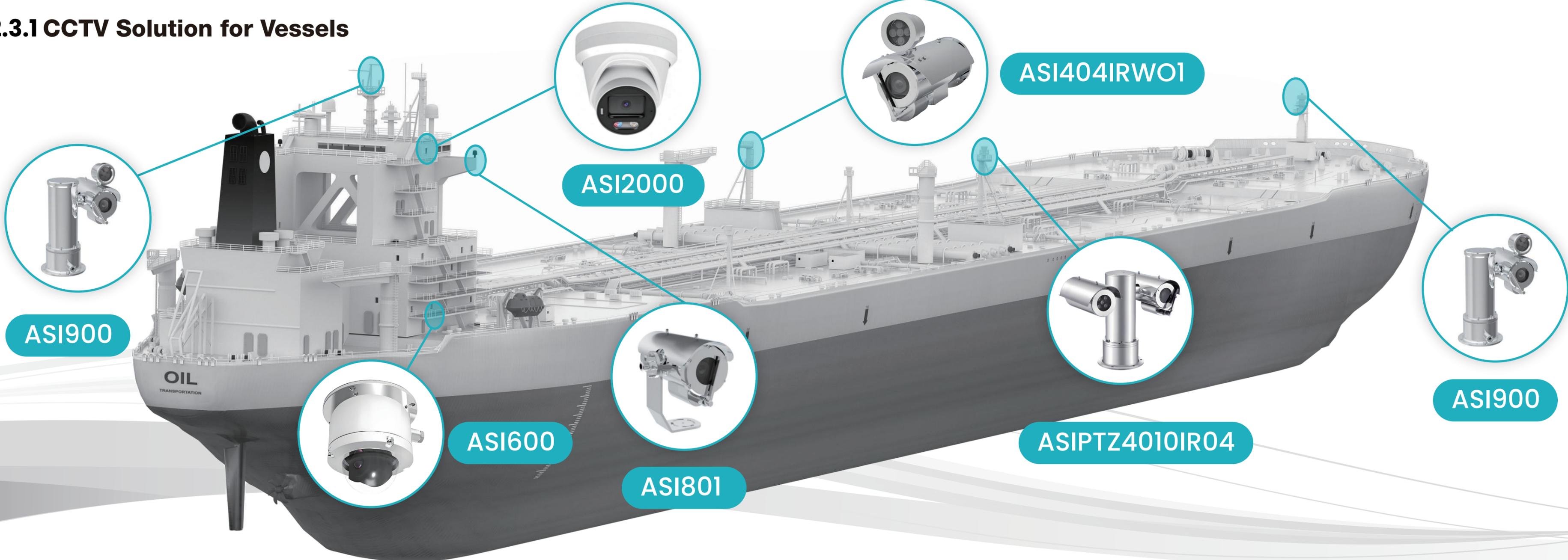
Requirement / Standard	China MSA Technical Guide 1.0
Effective Date	Mar. 2025
Applicability	Domestic Oil /Chemical Tankers, Gas Carriers and Passenger Ships
Minimum Resolution ≥1080p / ≥2MP	✓
Min. Frame Rate ≥30FPS / ≥15FPS	✓
Ingress Protection (IP66 In-door & IP68 Outdoor)	
Marine-grade Certification	
AI Anomaly Detection (Fatigue, Fire, PPE, etc.)	✓ (Mandatory)
Edge AI Device ≥6TOPS	✓
Real-time Voice Alarm	✓
Min. Local Storage (14 days / 30 days)	✓ (30 days)
Remote Viewing & Alerts	✓
Cybersecurity Compliance	
IEC 62676	
MLPS 2.0	✓

Our smart CCTV system exceeds the safety and surveillance requirements outlined in India's DGS MSN 02 of 2025 and fully complies with the technical standards mandated by China's MLPS Level 2 and MSA Technical Guide 1.0.

Requirement / Standard	India DGS MSN 02/2025
Effective Date	Existing: 12 Feb 2028 Newly Registered Ships: 3 year from registration date
Applicability	Indian flagged and SPL Vessels
Minimum Resolution ≥1080p / ≥2MP	✓
Min. Frame Rate ≥30FPS / ≥15FPS	✓
Ingress Protection (IP66 In-door & IP68 Outdoor)	✓
Marine-grade Certification	✓
AI Anomaly Detection (Fatigue, Fire, PPE, etc.)	✓ (Recommended)
Edge AI Device ≥6TOPS	
Real-time Voice Alarm	
Min. Local Storage (14 days / 30 days)	✓ (14 days)
Remote Viewing & Alerts	✓
Cybersecurity Compliance	✓
IEC 62676	✓
MLPS 2.0	

Our smart CCTV system exceeds the safety and surveillance requirements outlined in India's DGS MSN 02 of 2025 and fully complies with the technical standards mandated by China's MLPS Level 2 and MSA Technical Guide 1.0.

2.3.1 CCTV Solution for Vessels



2.3.2 CCTV System

Name	Outdoor Anti-Corrosion PTZ Camera	Outdoor Dome Camera	Outdoor Bullet Camera	Indoor Bullet Camera	Indoor Fixed Dome Camera	Outdoor Anti-Corrosion PTZ Camera	Outdoor Dome Camera	Outdoor Bullet Camera	Outdoor Bullet Camera	Outdoor Bullet Camera	Outdoor Bullet Camera	Outdoor Bullet Camera	Indoor Fixed Dome Camera	Indoor Fixed Dome Camera	Explosion Proof Dome Camera	Explosion Proof PTZ Camera	Explosion Proof Bullet Camera	Explosion Proof Bullet Camera
Model	ASI-2DY7430I-CWX	ASI-2DF8C432MX-AY	ASI-2XC6646-IZHRSY	ASI-2CD2245CV6-L	ASI-2CD2345CV4-I	ASI900	ASI600	ASI-VL404IRW01	ASI-VL432IRW01	ASI801	ASI-FL404IR02	ASI300	ASI2000	ASI-2CD1143G0-I	EX-ASIPTZ4010IR04N	EX-ASIPTZ4033IRW01	EX-ASI404IRW01	EX-ASI404IR02
Product Image																		
Pixel	4MP	4MP	4MP	4MP	4MP	4MP	4MP	4MP	4MP	4MP	4MP	4MP	4MP	4MP	4MP	4MP	4MP	4MP
Protection Grade	IP68	IP67	IP68	IP66	IP67	IP68	IP67	IP68	IP68	IP68	IP68	IP68	IP66	IP67	IP67	IP68	IP68	IP68
Focal Length	Zoom available, 32x	Zoom available, 32x	Zoom available, 4x	Fixed focus	Fixed focus	Zoom available, 33x	Zoom available, 5x	Zoom available, 4x	Zoom available, 32x	Zoom available, 18x	Fixed focus	Fixed focus	Fixed focus	Fixed focus	Zoom available, 5x	Zoom available, 33x	Zoom available, 4x	Fixed focus
Chinese Interface	√	√	√	√	√	√	√	/	/	√	/	√	/	/	√	√	/	/
English Interface	/	/	/	/	/	√	√	√	√	√	√	√	√	√	√	√	√	√
DC12V Power Supply	/	/	/	/	/	/	/	/	/	√	/	/	/	/	/	/	/	/
AC/DC24V Power Supply	/	√	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
AC100V-240V Power Supply	√	/	/	/	/	√	/	/	√	/	/	/	/	/	/	√	/	/
POE Power supply	/	/	√	√	√	/	√	√	/	/	√	√	√	√	√	/	√	√
Heating	√	√	√	/	/	√	/	√	√	√	/	/	/	/	/	√	√	/
Infrared	150m	500m	60m	30m	30m	150m	40m	100m	200m	/	30m	15m	30m	30m	40m	150m	100m	30m
Wiper	√	√	√	/	/	√	/	√	√	√	/	/	/	/	/	√	√	/
Explosion-proof	/	/	/	/	/	/	/	/	/	/	/	/	/	/	ATEX:II 2G Ex db IIC T6 Gb	ATEX:II 2G Ex db IIC T6 Gb	ATEX:II 2G Ex db IIC T6 Gb	ATEX:II 2G Ex db IIC T6 Gb
Suggested Installation Location	Compass deck, mast, deck, bow and stern monitoring	Left and right wings, port and starboard sides, front and rear mooring areas, gangway passage	Left and right wings, port and starboard sides, front and rear mooring areas, gangway passage	Engine Room	Cab, central control room, indoor rooms and corridors	Compass deck, mast, deck bow and stern monitoring	Left and right wings, port and starboard sides, front and rear mooring areas, gangway passage	Left and right wings, port and starboard sides, front and rear mooring areas, gangway passage	Left and right wings, port and starboard sides, front and rear mooring areas, gangway passage	Left and right wings, port and starboard sides, front and rear mooring areas, gangway passage	Left and right wings, port and starboard sides, front and rear mooring areas, gangway passage	Left and right wings, port and starboard sides, front and rear mooring areas, gangway passage	Cab, central control room, indoor rooms and corridors	Cab, central control room, indoor rooms and corridors	Left and right wings, port and starboard sides, front and rear mooring areas, gangway passage	Compass deck, mast, deck bow and stern monitoring	Left and right wings, port and starboard sides, front and rear mooring areas, gangway passage	Left and right wings, port and starboard sides, front and rear mooring areas, gangway passage

2.4 Maritime LEO Satellite Communication System

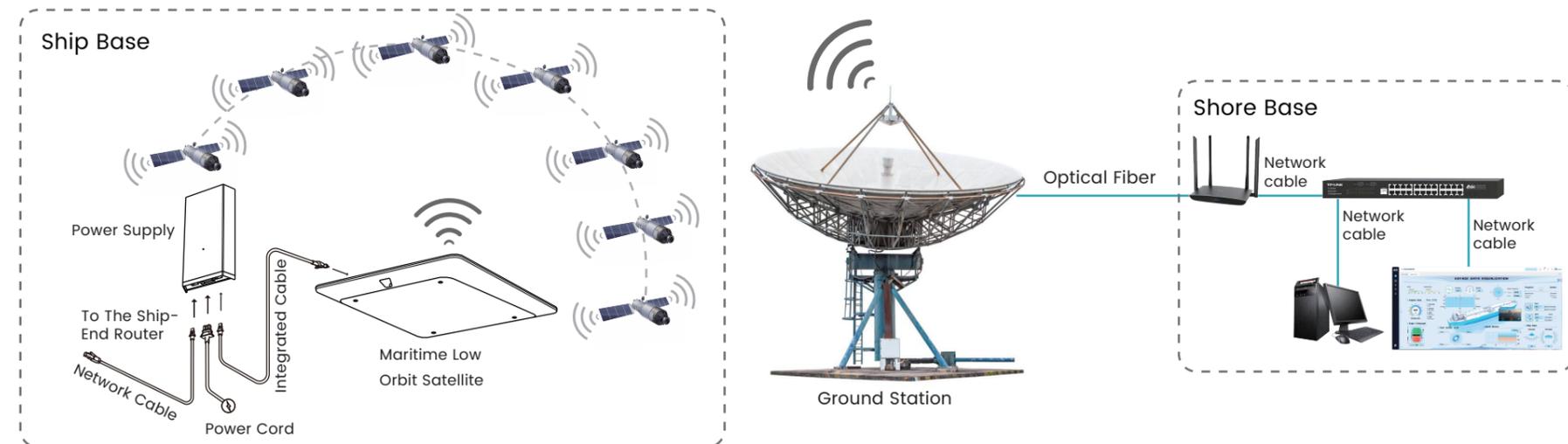
System Introduction

The maritime LEO satellite system can provide high bandwidth, low latency broadband and communication services for global consumers and commercial users.

Technical parameters

Field of View	140°
Dimensions	57.5x51.1cm
Support Up and Down Speeds	8-25Mbps Up and 40-220Mbps Down
Environment Rating	IP56

Please note that due to the relatively new technology of maritime LEO satellite services, there is no network service within 15 nautical miles offshore in countries where their use is not allowed. Generally, there is network service beyond 15 nautical miles offshore, and the distance may vary among different countries. The actual effect shall prevail.



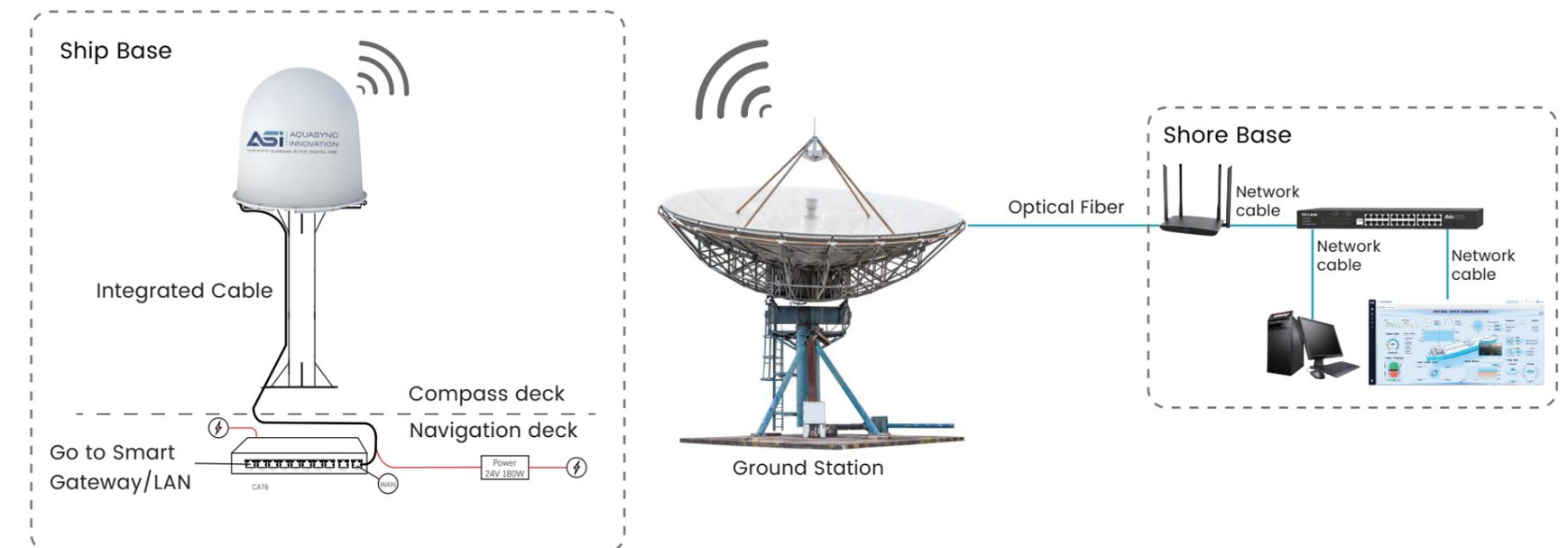
2.5 VSAT Satellite Communication System

System Introduction

The VSAT system is composed of a hub station and many remote VSATs scattered in each user's location. It can access the Internet without any ground lines, and is not limited by terrain, distance and ground communication conditions.

Technical parameters

Antenna Type	Three-Axis (Polarized) Ship Mounted Dynamic Communication
Antenna Diameter	100cm
BUC	8W
Environment Rating	IP56



YOUR SHIP'S GUARDIAN IN THE DIGITAL AGE

Oceansite Platform Integrated Solution

Platform Introduction

Configuration Application

3.1 Cybersecurity Management Platform

3.2 Intelligent Ship System

3.3 Ship-Fleet Management System



PART THREE

Platform Solution



System Integration

Centralized management of all ship systems



Safety and Compliance

Meets UR E27 cybersecurity level SL0 requirements



Ship-Shore Collaboration

Ship-to-shore information sharing, shore-based remote operation and maintenance



Data Management

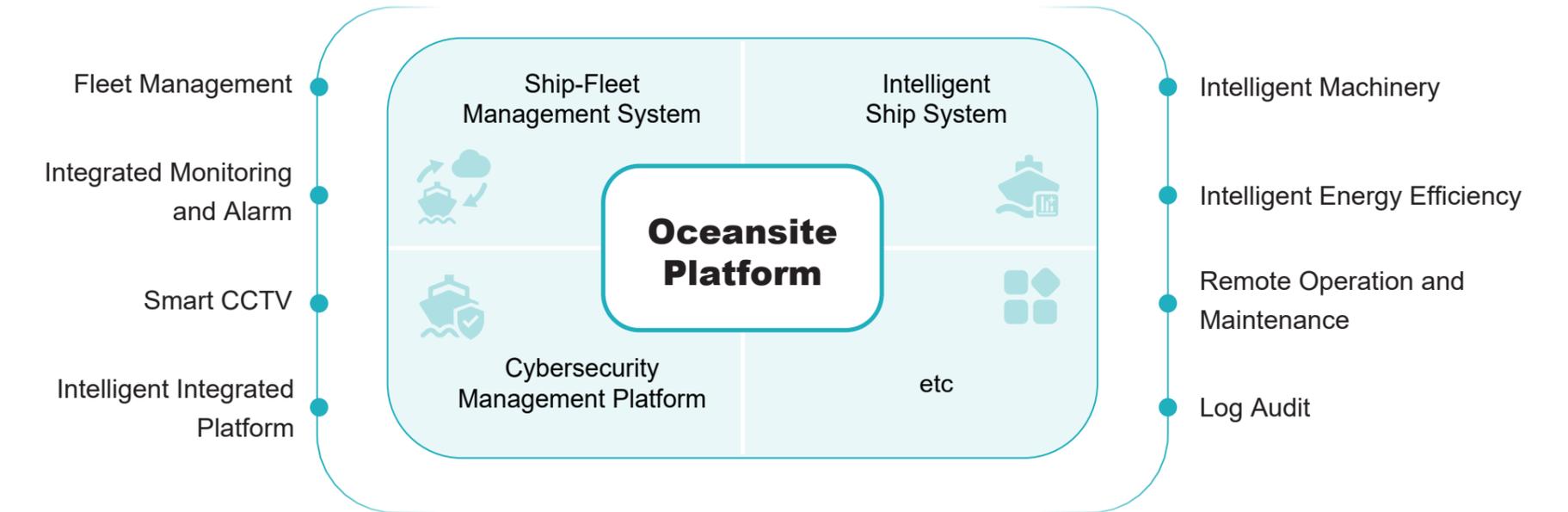
Ship-wide data collection and analysis



Flexible Configuration

Platform + App model, purchase as needed

Configuration Application



Challenges in Ship Digitalization

01

Data Fragmentation

Each system operates independently, making data sharing difficult.

02

Data Security Risks

Lack of a unified security protection mechanism.

03

Low Data Utilization

Unable to extract value from historical ship data.

04

Difficult Business Decision-Making

Lack of intelligent guidance, relying on manual judgment.

05

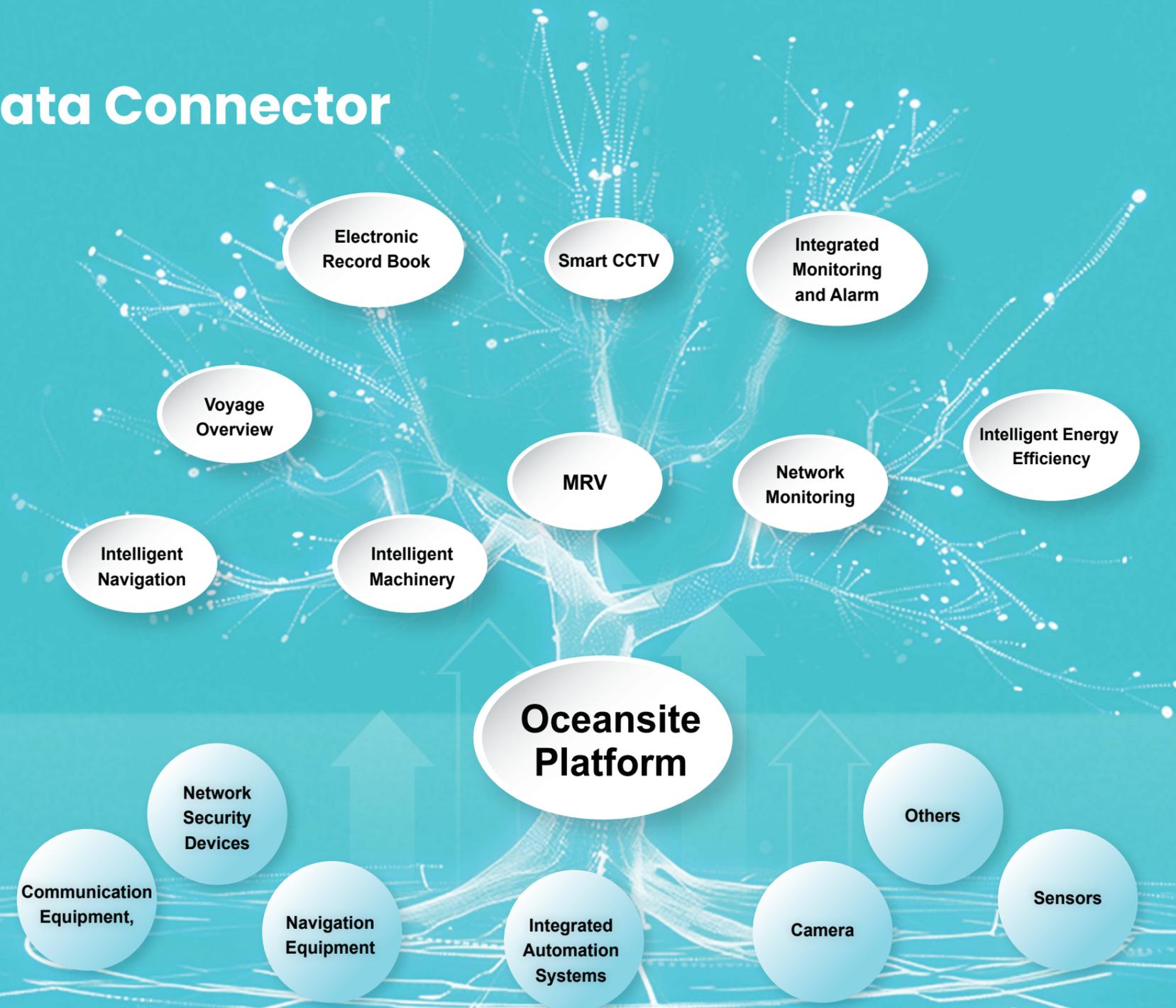
Slow Response to Business Requirements

Business requirements for ship digitalization are changing rapidly, and traditional models are difficult to meet.

Ships need a platform, not more fragmented systems.



Data Connector



Advantages



Application Ecosystem

Rich app modules meet most application scenarios.

Includes **3** products

Covering over **20+** application modules



Cloud Platform

Supports multi-fleet, one-stop management in the cloud

Single user supports **20+** vessel connections

Increases fleet operational efficiency by **25%**



Compatibility

Compatible with and integrates third-party systems and devices, such as AMS, BMS, EMS, PMS, and various sensors

Supports **10+** communication protocols

Supports **100+** devices



Scalability

The system utilizes microservices and component-based design, enabling rapid response to customized requirements

Utilizes over **10+** microservices

Includes over **50+** standard components

YOUR SHIP'S GUARDIAN IN THE DIGITAL AGE

3.1 Cybersecurity Management Platform

3.2 Intelligent Ship System

3.3 Ship-Shore Fleet Management System

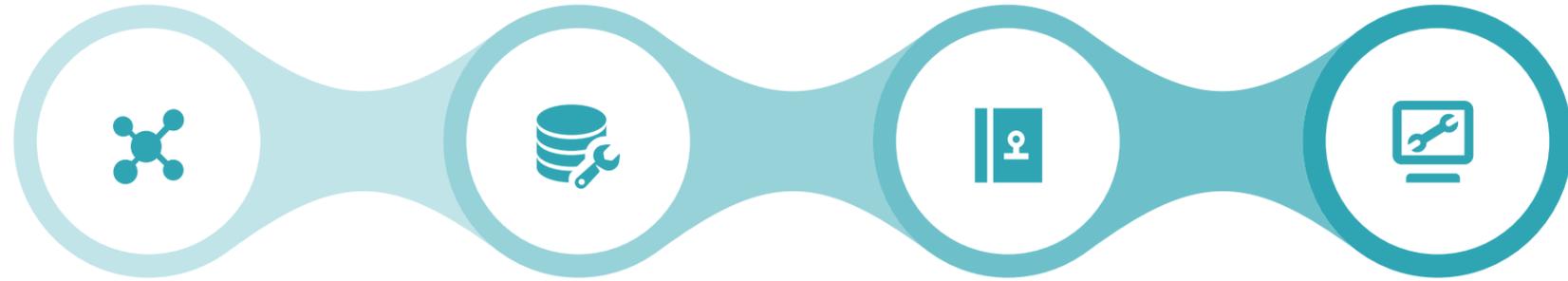


PART THREE

3.1.1 Specification Requirements



3.1.2 Software Features



Topology Management

Visualizes the connectivity and real-time status of all onboard cybersecurity devices, providing clear insights into security alerts, perimeter protection, and network monitoring.

Asset Management

Supports seamless import/export of vessel asset inventories with customizable editing options to meet diverse operational needs.

Log Auditing

Enables detailed log auditing and traceability, with strict control and recording of secure access activities.

Remote Maintenance

Empowers users to perform remote operations on cybersecurity devices, with full session recording and playback for accountability and review.

Real Time Monitoring

Asset Management:

Cybersecurity management platform has conducted different dimensions of statistics on the amount of security device currently managed.

Security Incidents:

Cybersecurity management platform displays real-time risk logs of boundary protection and ship terminal protection equipment, supporting historical data tracing.

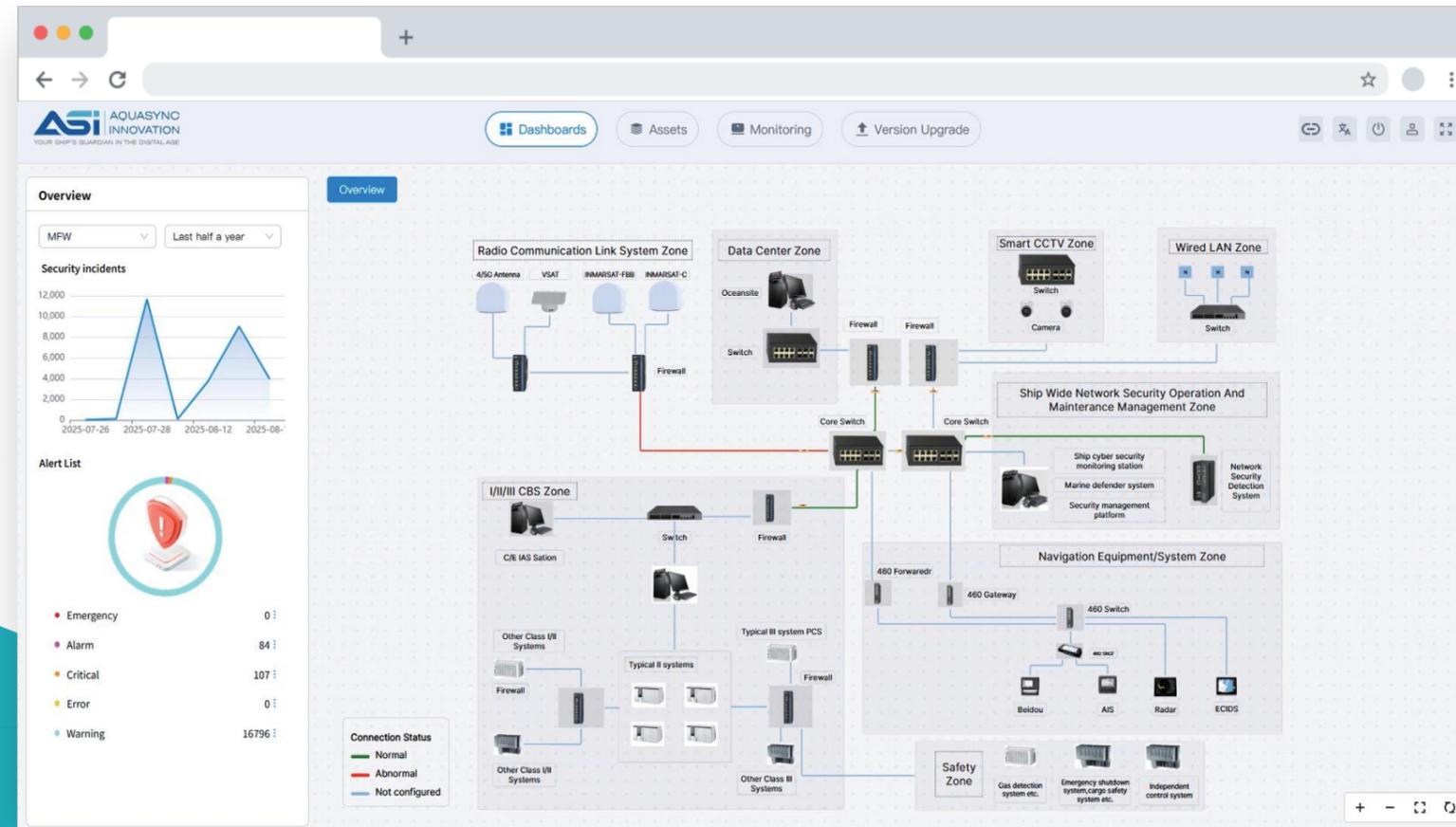
Real Time Status:

Cybersecurity management platform monitors the status of the currently managed security device in real time, which can help crew visually present the real-time status of various assets under control in the current network.

3.1.3 Typical Applications

Topology Visualization

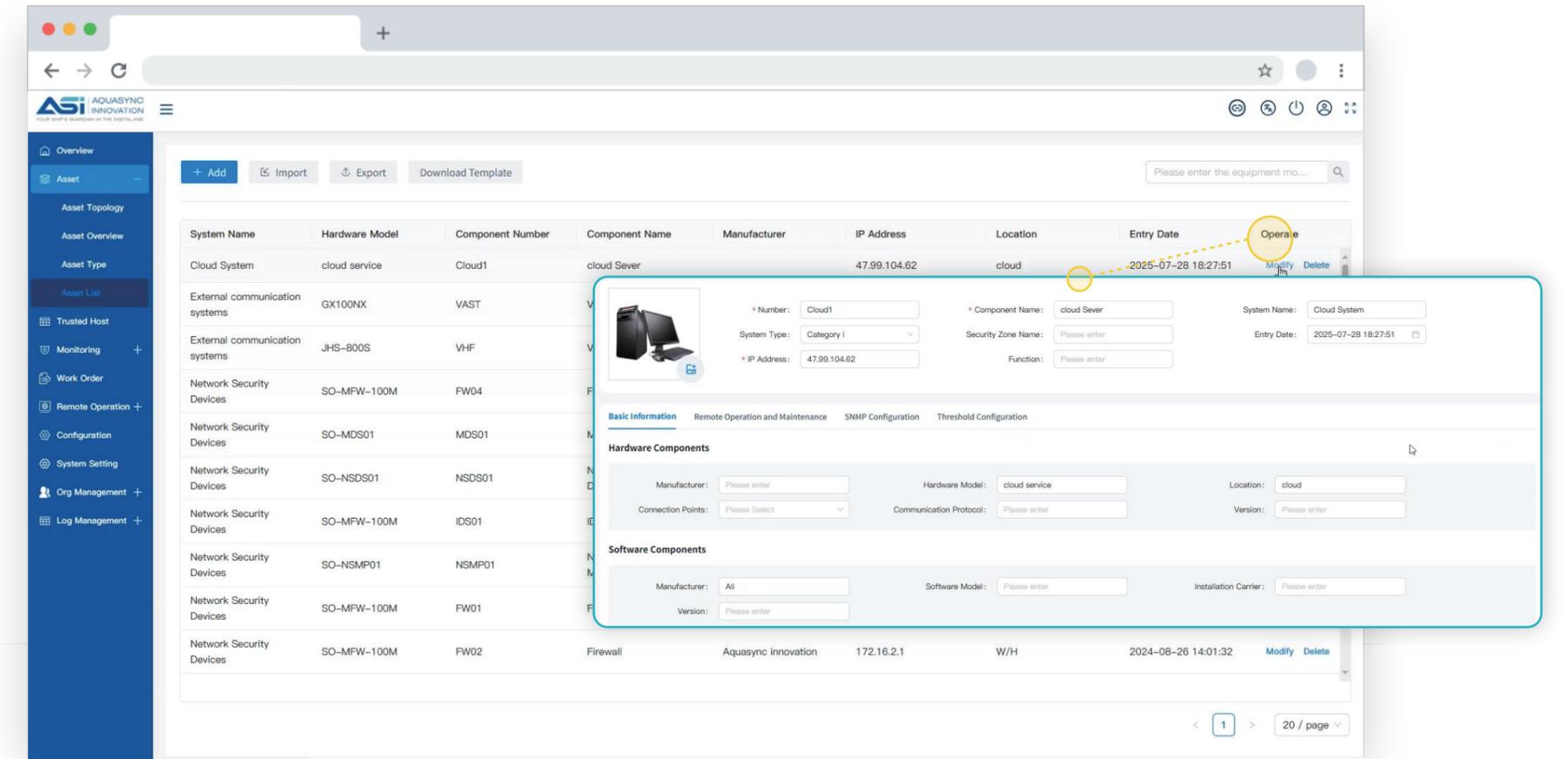
The shore side can visually view the ship's network structure and understand the distribution relationship of firewalls, switches, servers and other equipment.



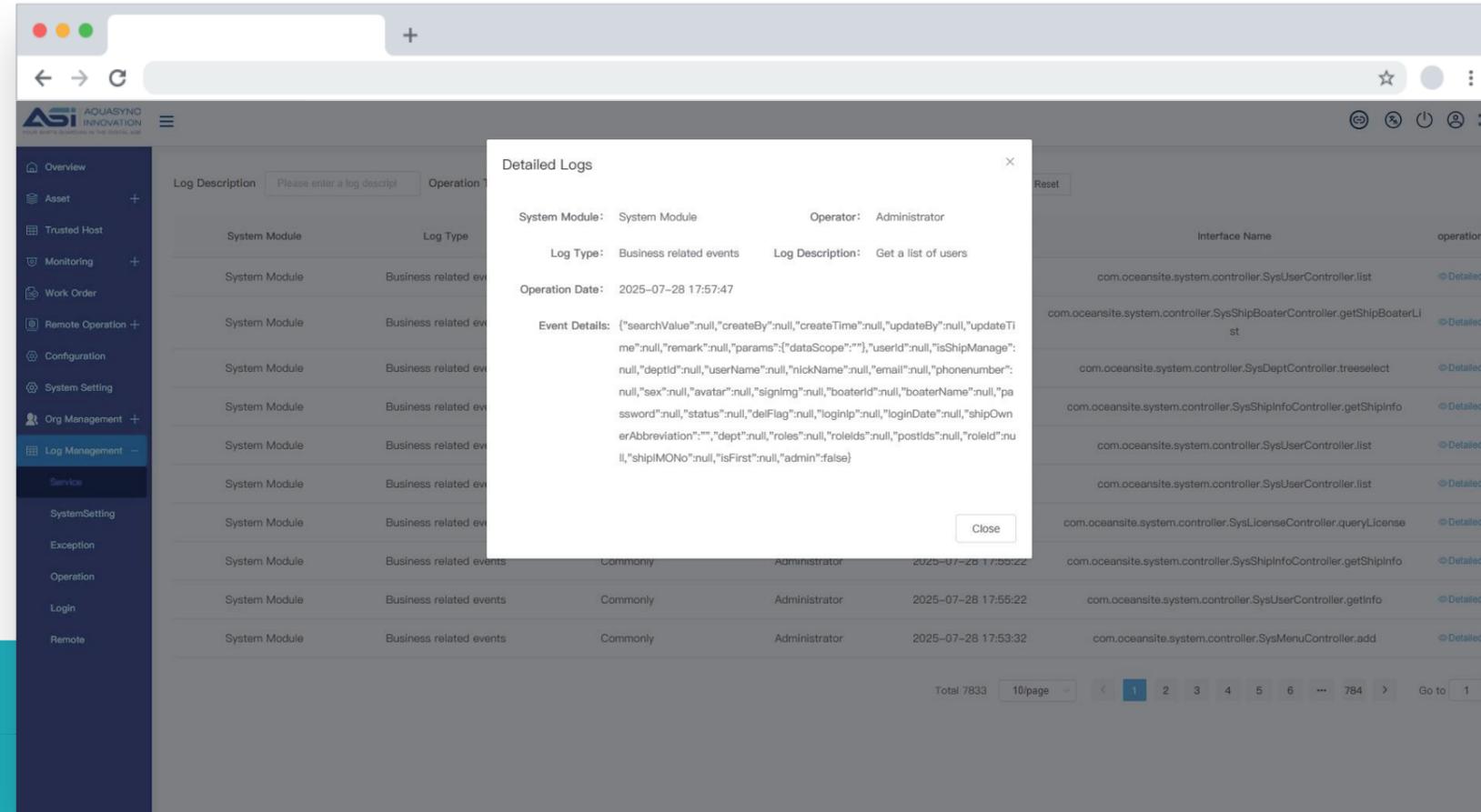
Network topology management

Asset Information Management

Supports batch import and export of equipment lists, facilitating shore-side equipment backup and updates.

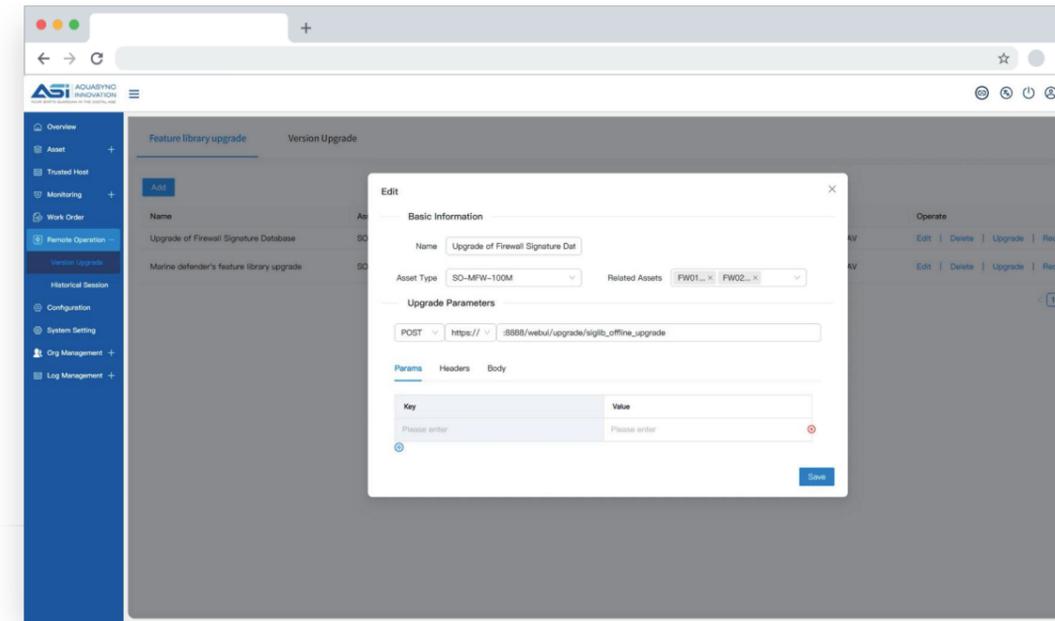


Remote Operation and Maintenance



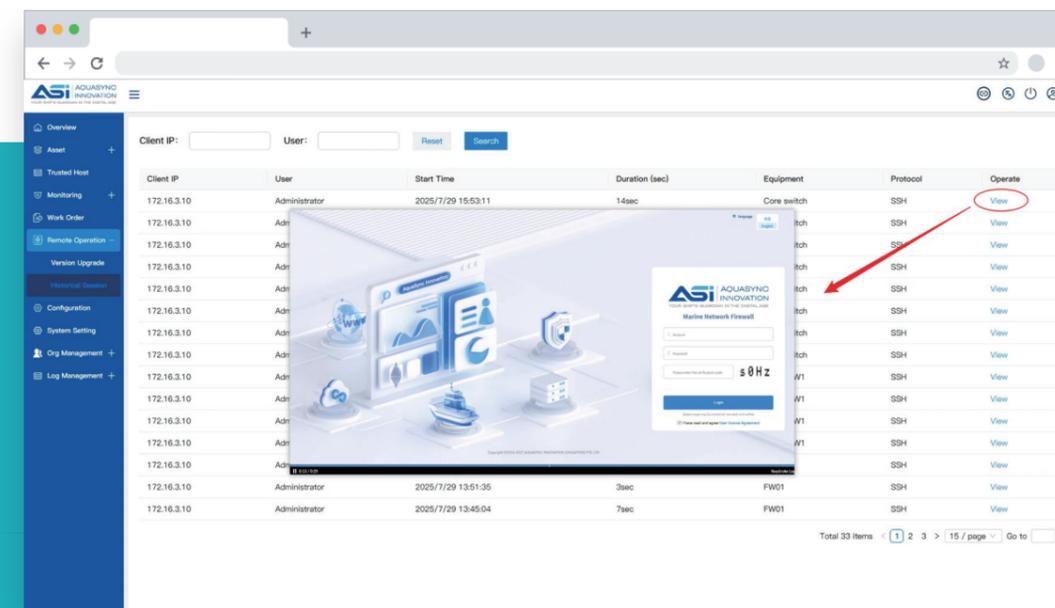
Log Auditing

Comprehensive log auditing and traceability across all critical operations, enabling real-time compliance monitoring, historical behavior reconstruction, and root cause analysis



Security Upgrades

Shore-based can centrally distribute virus signature databases, security patches, and other update packages to ensure the continuous protection of ship systems.



Remote Maintenance

The ability to remotely operate network security devices and provide playback functionality.

YOUR SHIP'S GUARDIAN IN THE DIGITAL AGE

3.1 Cybersecurity Management Platform

3.2 Intelligent Ship System

3.3 Ship-Shore Fleet Management System



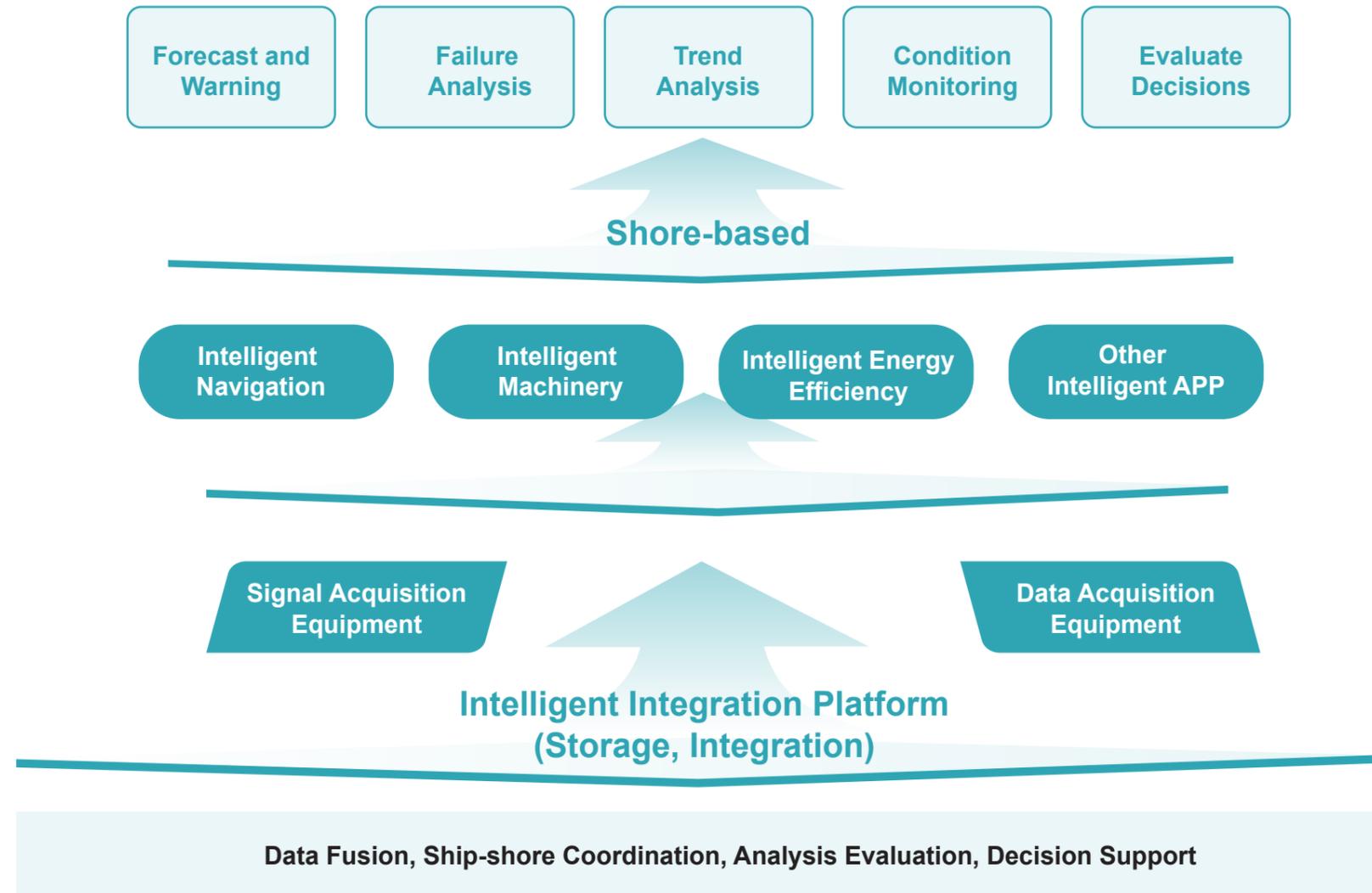
PART THREE

IACS UR E22

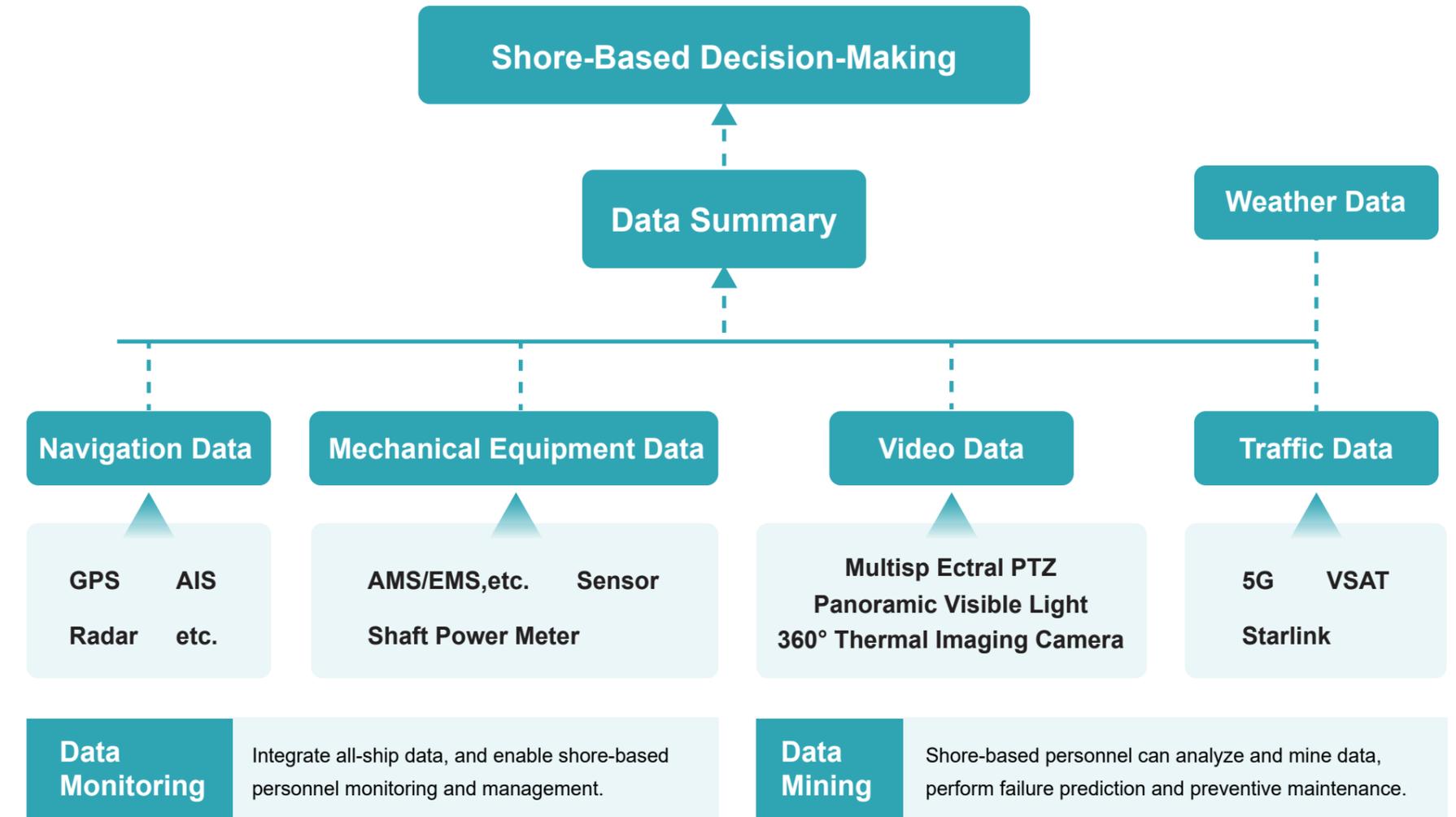
Intelligent Integration Platform、Intelligent Energy、Intelligent Machinery Software Evaluation Report & Software Testing Report



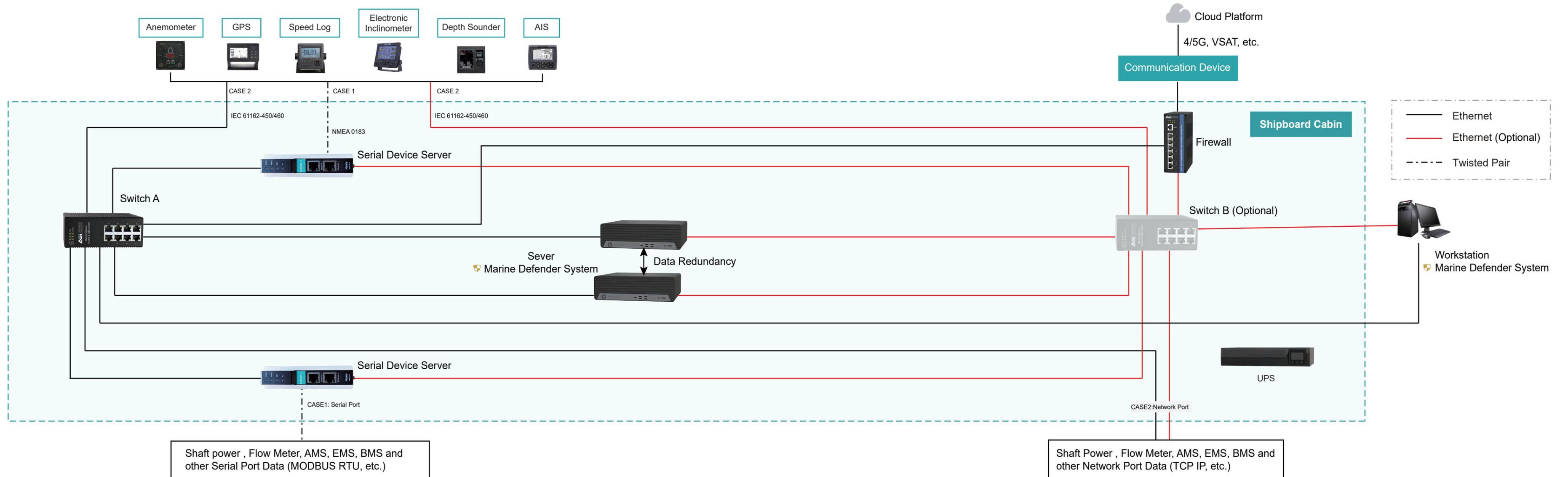
3.2.1 System Structure



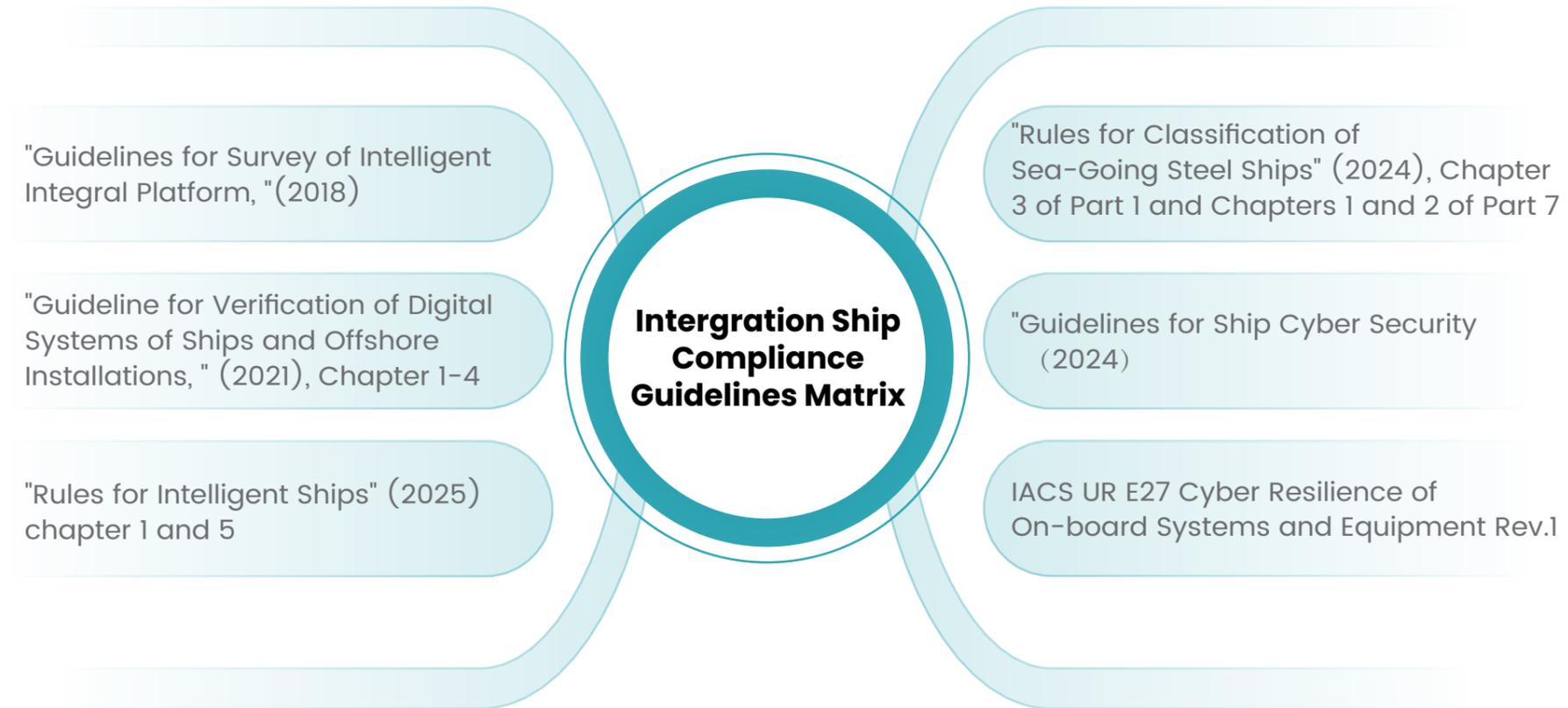
3.2.2 Data Fusion



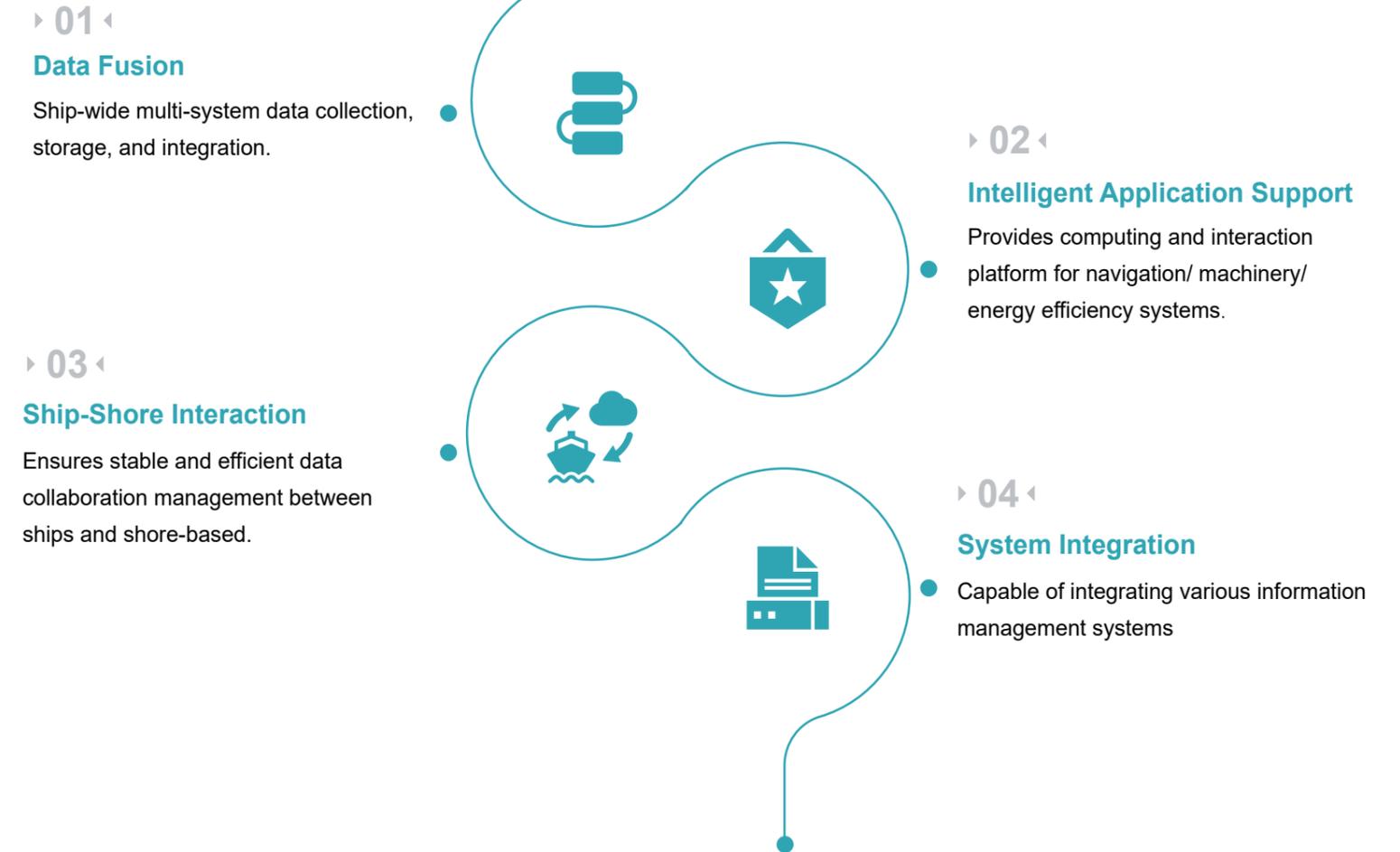
3.2.3 I/E/M Network Topology



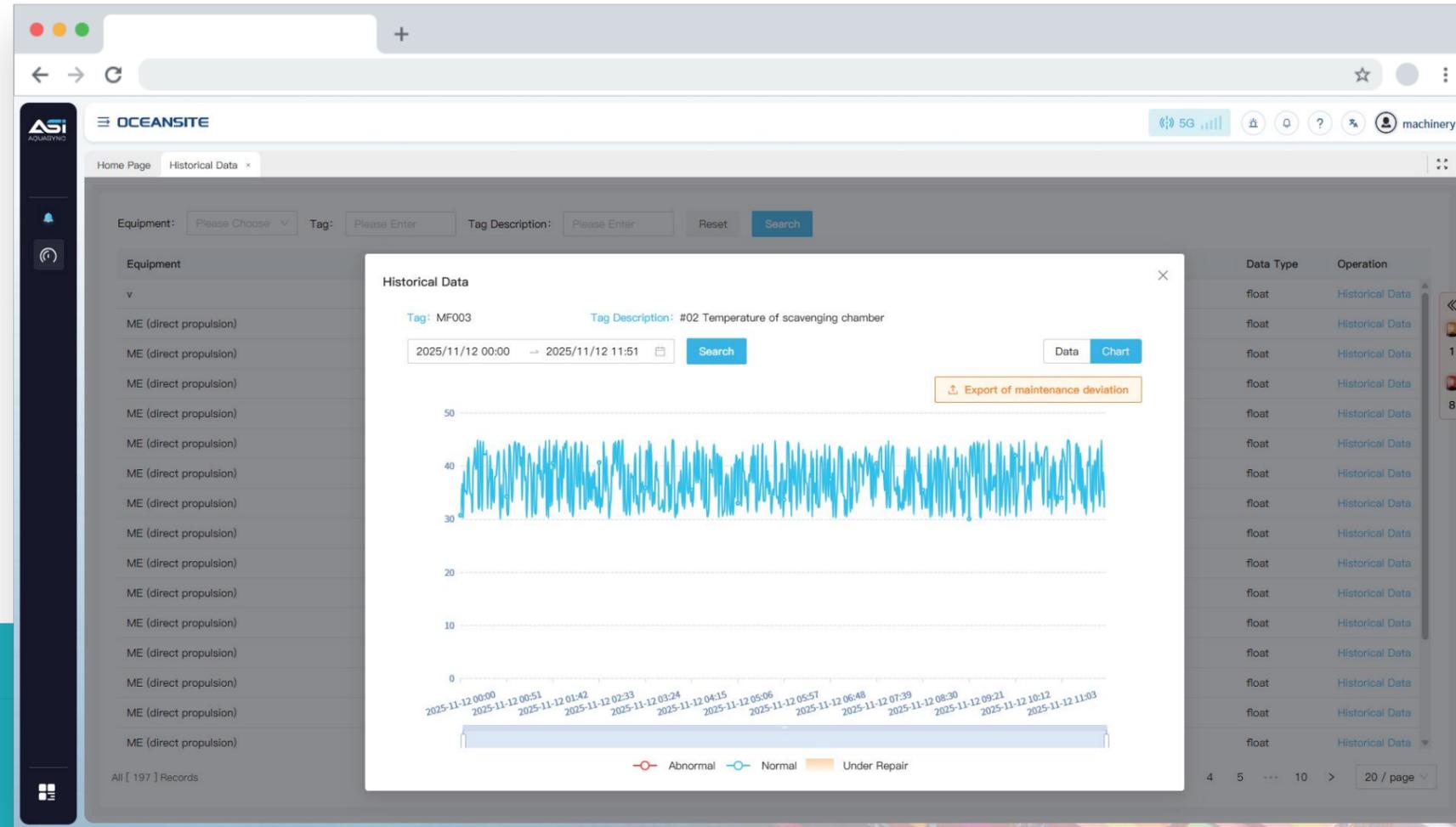
3.2.4 Intelligent Integration Platform



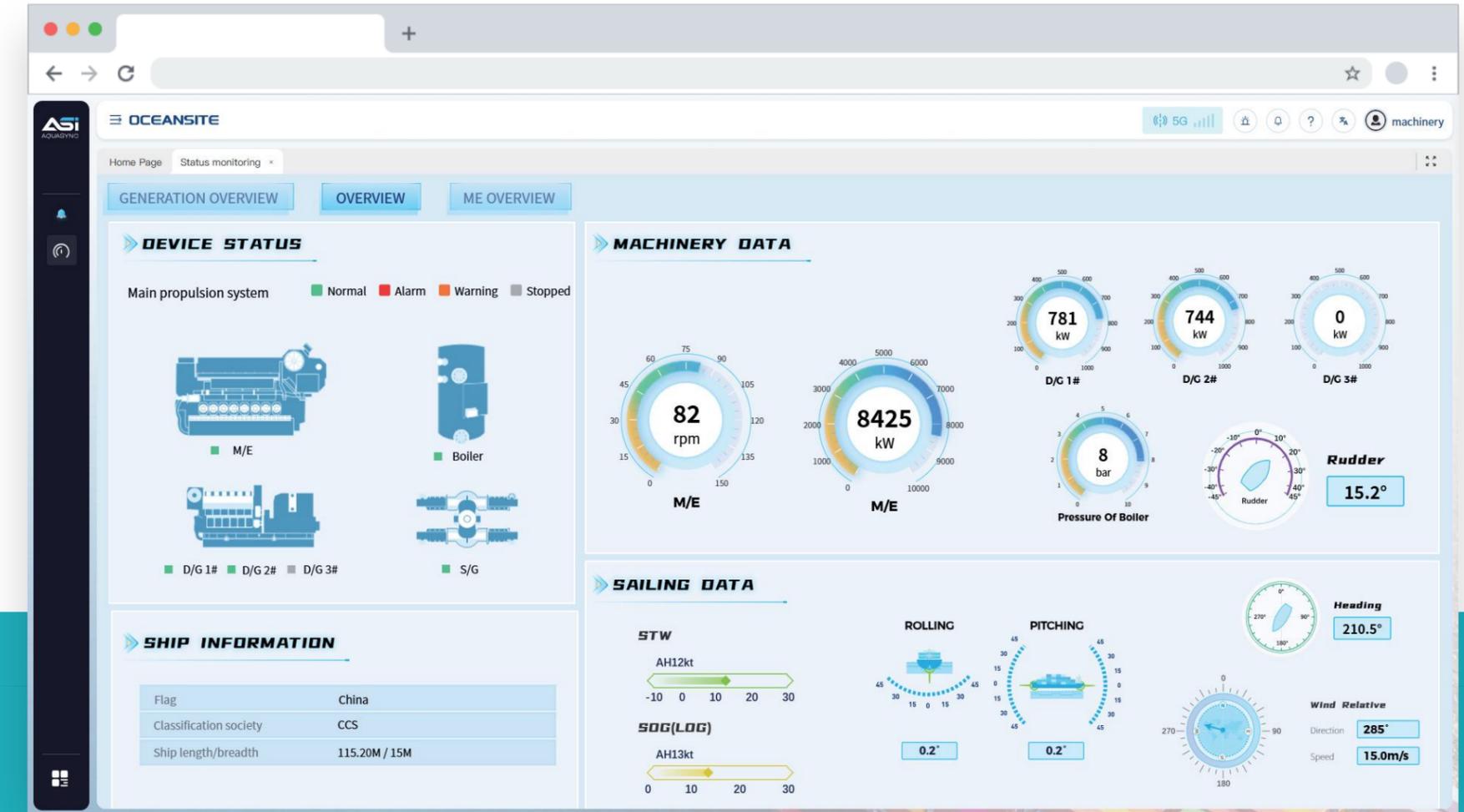
System Description



Interface Presentation

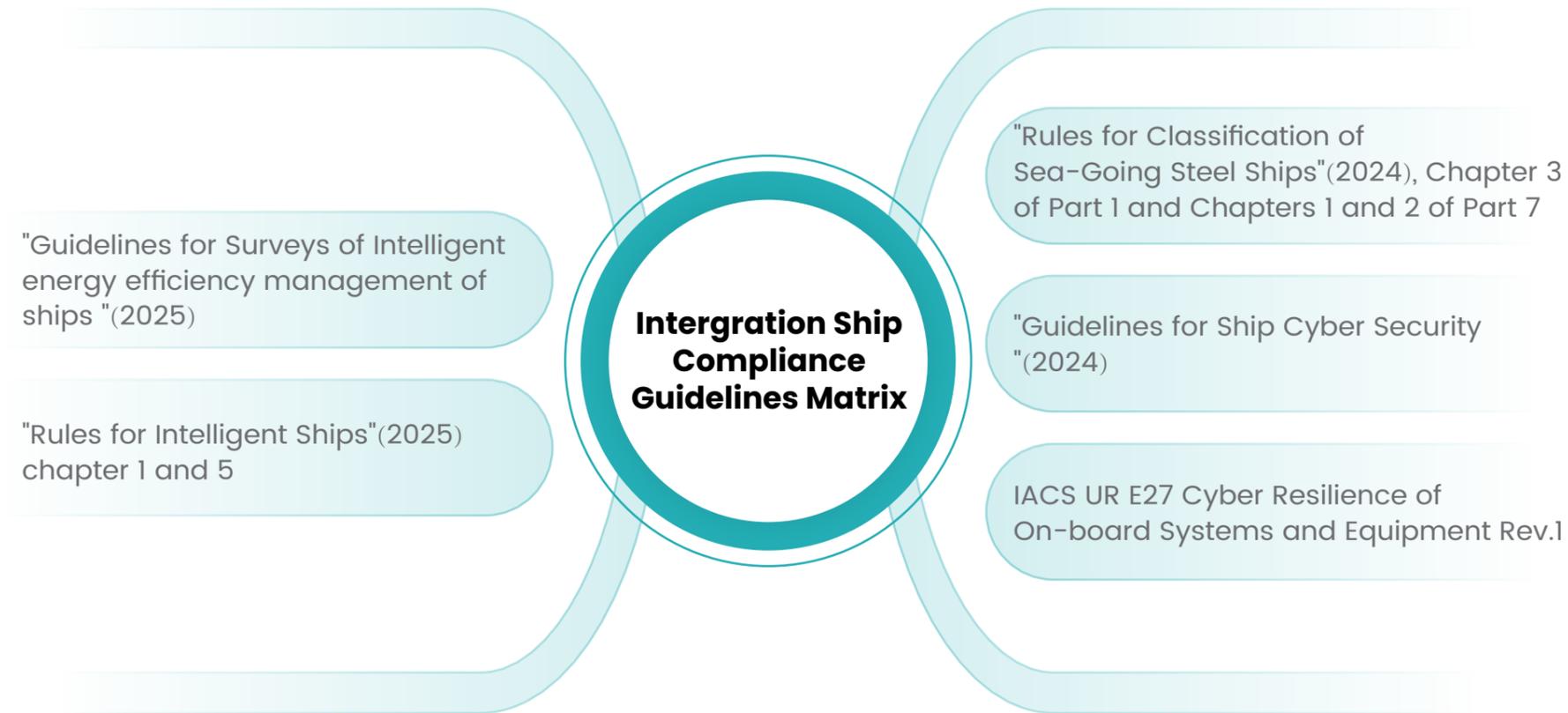


○ DataManagement: Record historical data from sensors and measurement points to show trends.



○ Overview: Real-time data from navigation, cabin conditions, etc., are visualized.

3.2.5 Intelligent Energy Efficiency



System Description

› 01 ‹
Voyage Data Monitoring
 Real-time monitoring of man energy-consuming equipment and navigation status data.

› 04 ‹
Threshold Exceedance Alarm
 Notifications for exceeding limits in energy efficiency consumption, or CII (Carbon Intensity Indicator) metrics.

› 02 ‹
Energy Consumption Monitoring & Evaluation
 Real-time display of energy consumption distribution across equipment and the ship's overall energy efficiency status.

› 03 ‹
Standardized Energy Efficiency Reports
 Automated generation of IMO/EU/UK-compliant energy efficiency evaluation reports.

› 05 ‹
Fuel Information Management
 Management of bunkering, fuel inventory, and fuel switching operations.

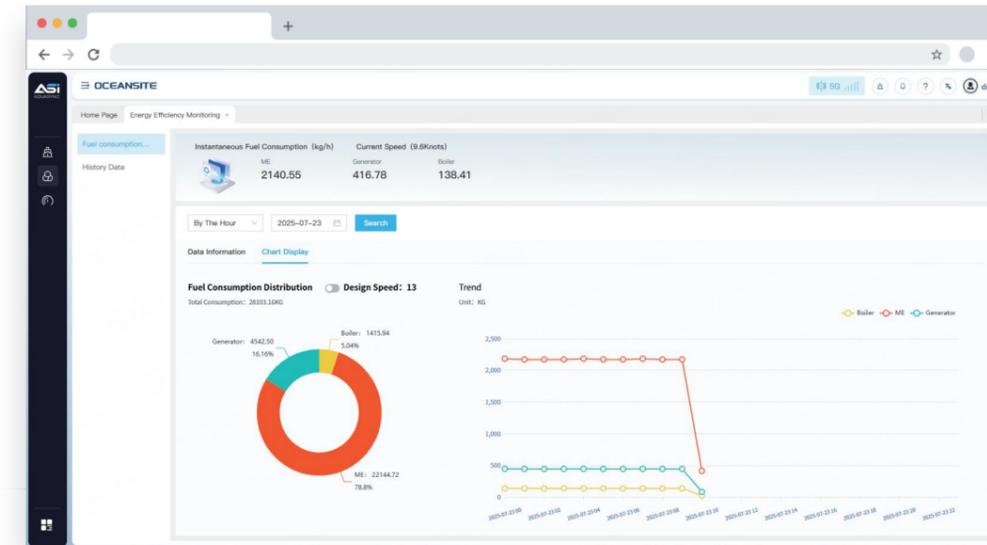


Interface Presentation



Energy Efficiency Overview

Vessel navigation information and the energy efficiency and consumption status during navigation.



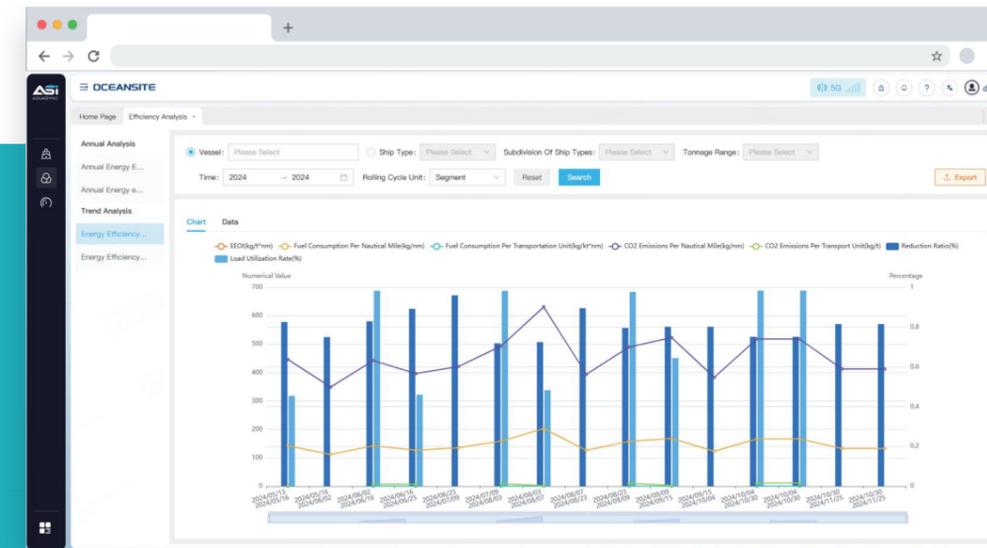
Efficiency Monitoring - Fuel Consumption Management

Fuel consumption data and percentage of each fuel-consuming device.

Arrival / Departure No.	Company V...	Port (CN)	Port (EN)	Inside/O...	Arrival Time (LT)	Arrival ...	Departure Time (LT)	Departu...	Report ...	Status	Sells...	Cargo/Arriv	Operations
V70-V71	新嘉坡	NEW PORT1	Inside	2025-02-27 03:1...	East 1Z...	2025-02-27 16:1...	East 1Z...	Not Rep...	Submitted	3.00	0.00		Edit Delete
V67-V70	新嘉坡	NEW PORT	Inside	2025-02-25 15:5...	East 8Z...	2025-02-26 19:5...	East 8Z...	Not Rep...	Submitted	1.00	20.00		Edit Delete
V67	德皇里	Port Medan...	Inside	2024-11-24 19:1...	East 8Z...	2024-11-25 20:2...	East 8Z...	Not Rep...	Submitted	3816.00	0.00		Edit Delete
V67	德皇里	Anchoring	Inside	2024-11-17 13:1...	East 8Z...	2024-11-24 16:3...	East 8Z...	Not Rep...	Submitted	0.00	0.00		Edit Delete
V67	德皇里	Anchoring	Inside	2024-11-05 16:5...	East 8Z...	2024-11-06 05:0...	East 8Z...	Not Rep...	Submitted	0.00	0.00		Edit Delete
V67	德皇里	Anchoring	Inside	2024-11-02 20:3...	East 8Z...	2024-11-05 11:1...	East 8Z...	Not Rep...	Submitted	0.00	0.00		Edit Delete
V66-V67	丹东	DANDONG	Inside	2024-10-27 18:1...	East 8Z...	2024-10-30 13:0...	East 8Z...	Not Rep...	Submitted	3714.00	177123.00		Edit Delete
V66	德皇里	Anchoring	Inside	2024-10-20 15:0...	East 8Z...	2024-10-27 13:4...	East 8Z...	Not Rep...	Submitted	0.00	0.00		Edit Delete
V66	丹戎	Dempier, Wa	Inside	2024-10-03 15:3...	East 8Z...	2024-10-04 23:0...	East 8Z...	Not Rep...	Submitted	3869.00	0.00		Edit Delete
V66	德皇里	Anchoring	Inside	2024-09-30 15:4...	East 8Z...	2024-10-03 12:1...	East 8Z...	Not Rep...	Submitted	0.00	0.00		Edit Delete
V65-V66	德皇里	Bayuan	Inside	2024-09-12 22:1...	East 8Z...	2024-09-15 08:4...	East 8Z...	Not Rep...	Submitted	566.00	116014.00		Edit Delete

Navigation & Berthing Information

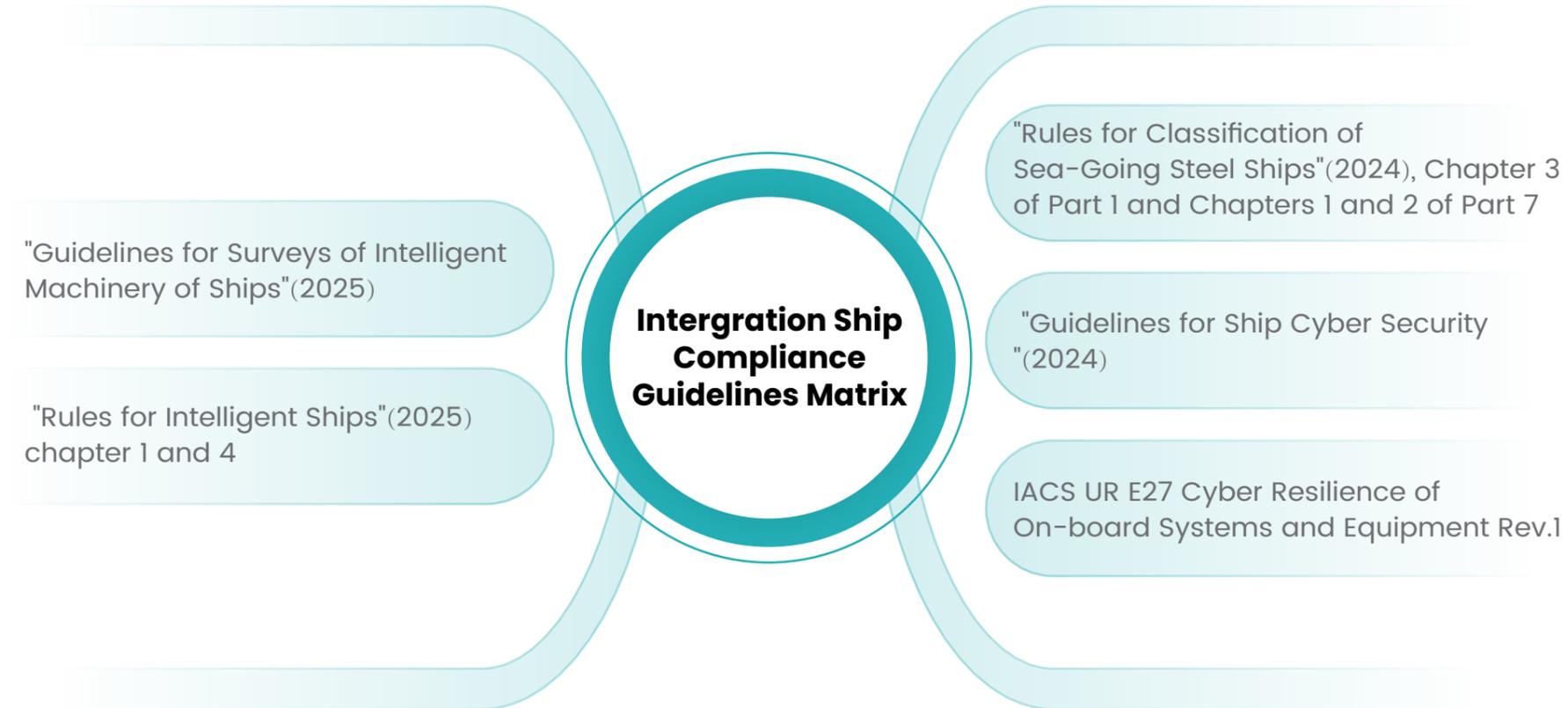
Records the navigation and berthing information for each voyage segment of the vessel.



Efficiency Analysis - Trend Analysis

Statistics on EEOI, fuel consumption, CO2 emissions, and other indicators.

3.2.6 Intelligent Machinery



System Description

› 01 ‹

Equipment Status Monitoring

Monitors the operational status of major propulsion-related equipment and systems in the cabin.



› 02 ‹

Knowledge Base

Continuously accumulates expert experience to provide decision-making recommendations.



› 03 ‹

Health Analysis

Intelligently analyzes and evaluates the health status of equipment and systems.



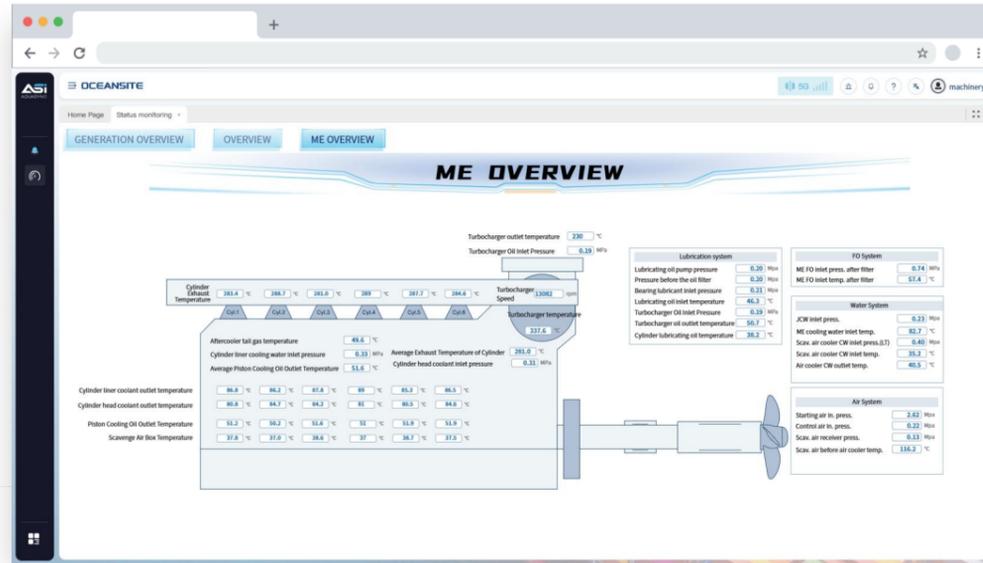
› 04 ‹

Decision Support

Assists crew in quickly identifying and resolving issues.

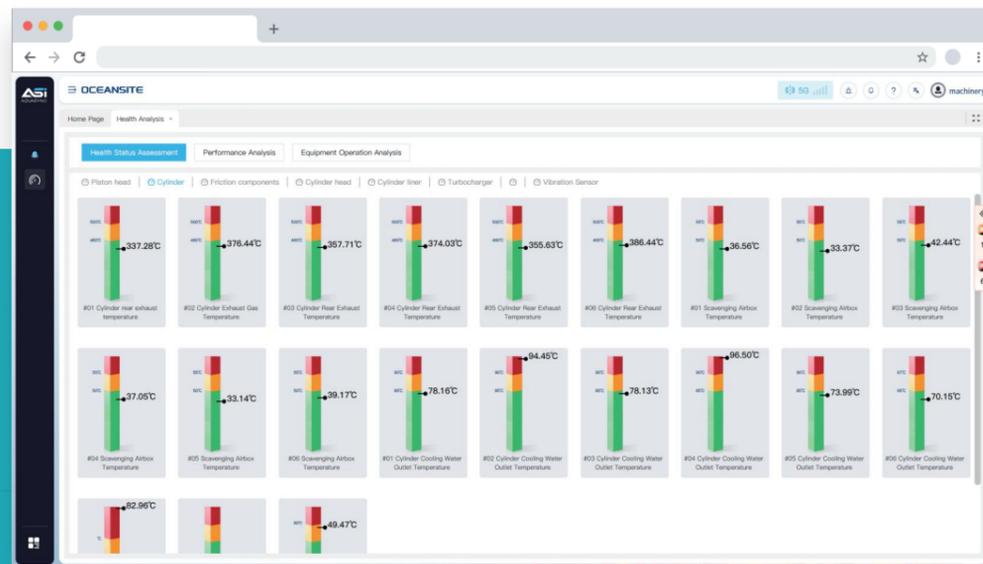


Interface Presentation



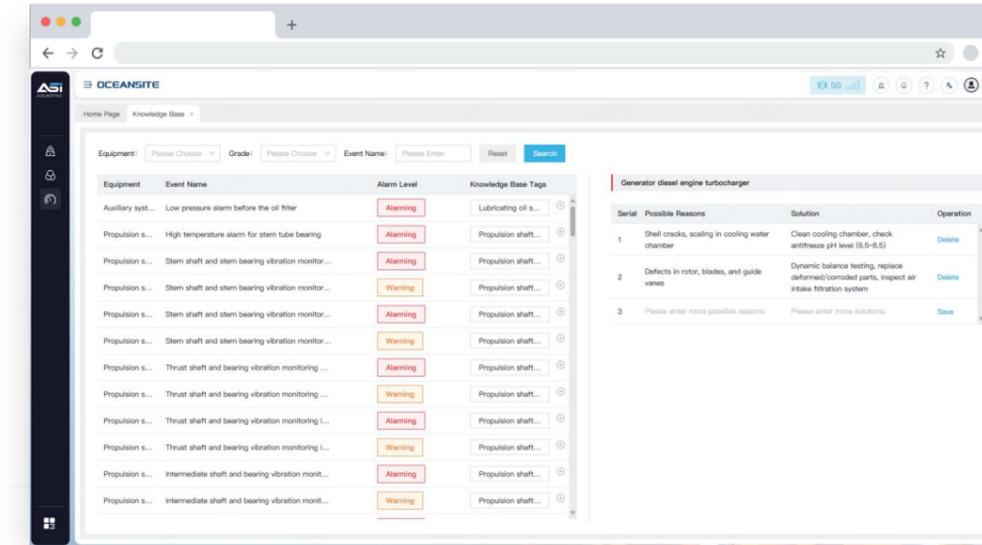
○ Status Monitoring

Visualize the real-time operation of equipment such as mainunits, generators, and boilers.



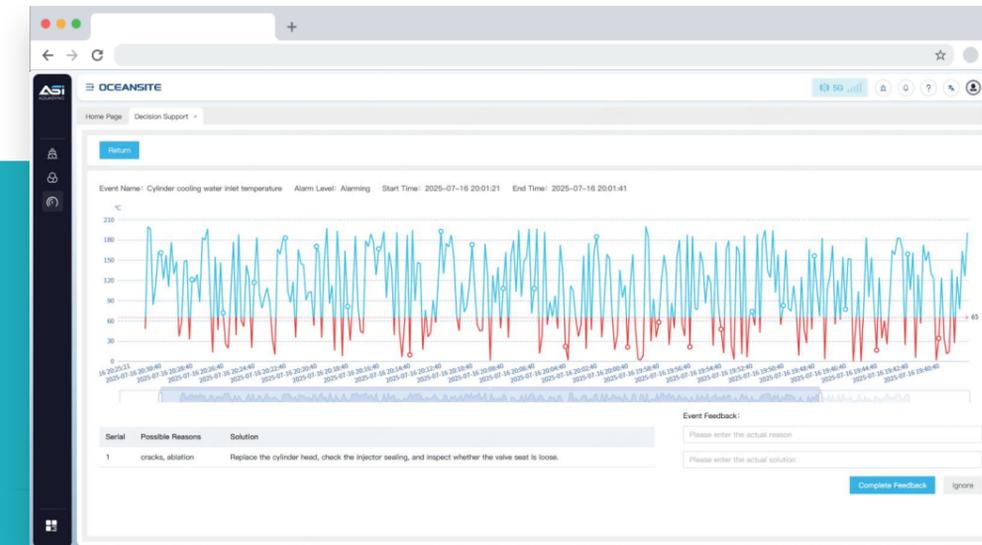
○ Health Analysis

Based on condition monitoring data, analyzes and evaluates the operating state and health status of equipment and systems.



○ Knowledge Base

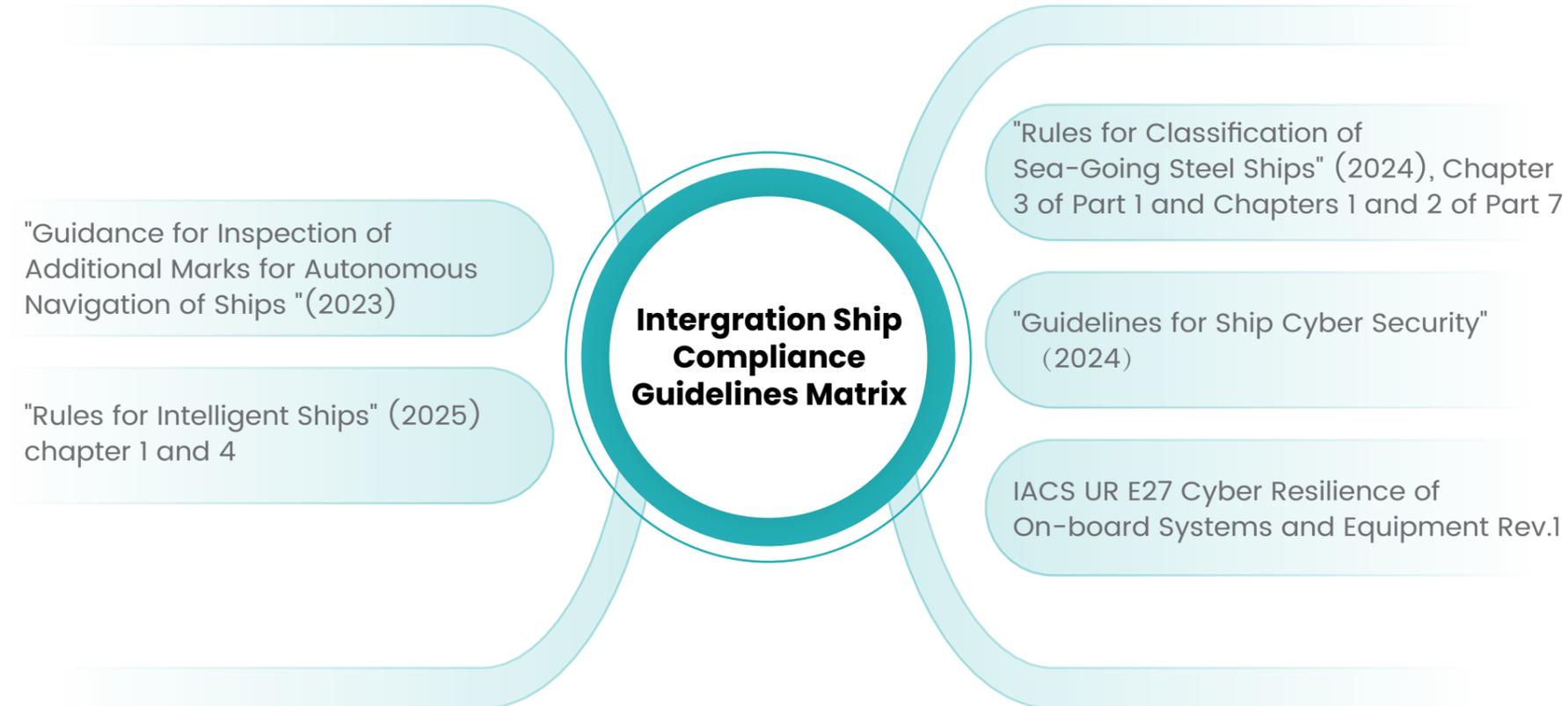
Integrates crew and expert opinions to provide corresponding handling suggestions for different types of abnormal alarms and supports continuous iterative improvement.



○ Decision Support

Based on analysis and evaluation results, provides rational suggestions to support equipment and system usage and management decisions.

3.2.7 Intelligent Navigation



System Description

▶ 01 ◀

Route & Speed Optimization

Automatically plans optimal routes and speeds by integrating ECDIS/ meteorological data.

▶ 03 ◀

Collision/Grounding Warning

Intelligent obstacle avoidance system based on AIS/radar/water bathymetry data.

▶ 02 ◀

Visual Enhancement

Provides crew with augmented perception in rain, snow, fog, low-light, and adverse weather conditions.

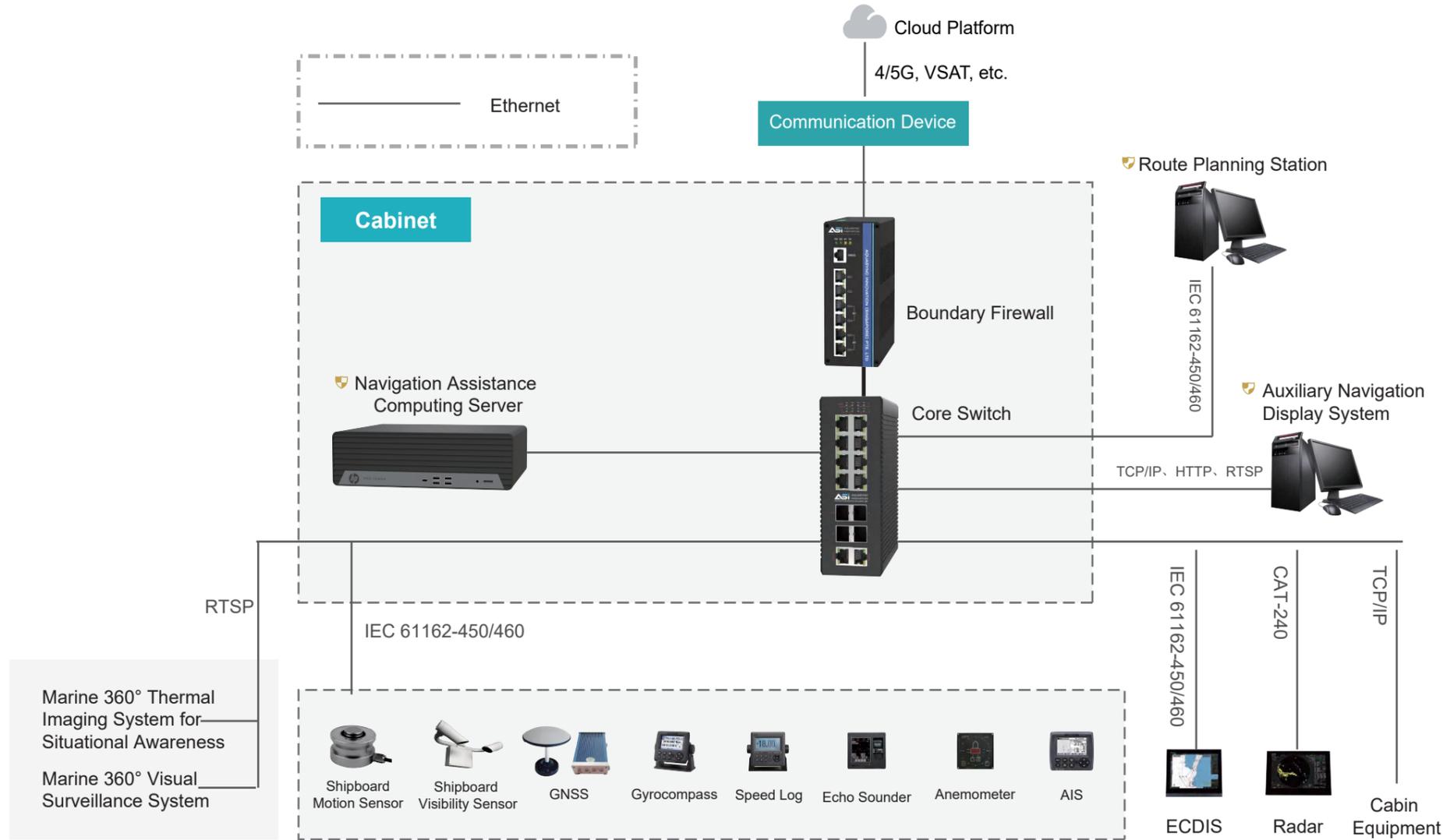
▶ 04 ◀

Voyage Information Visualization

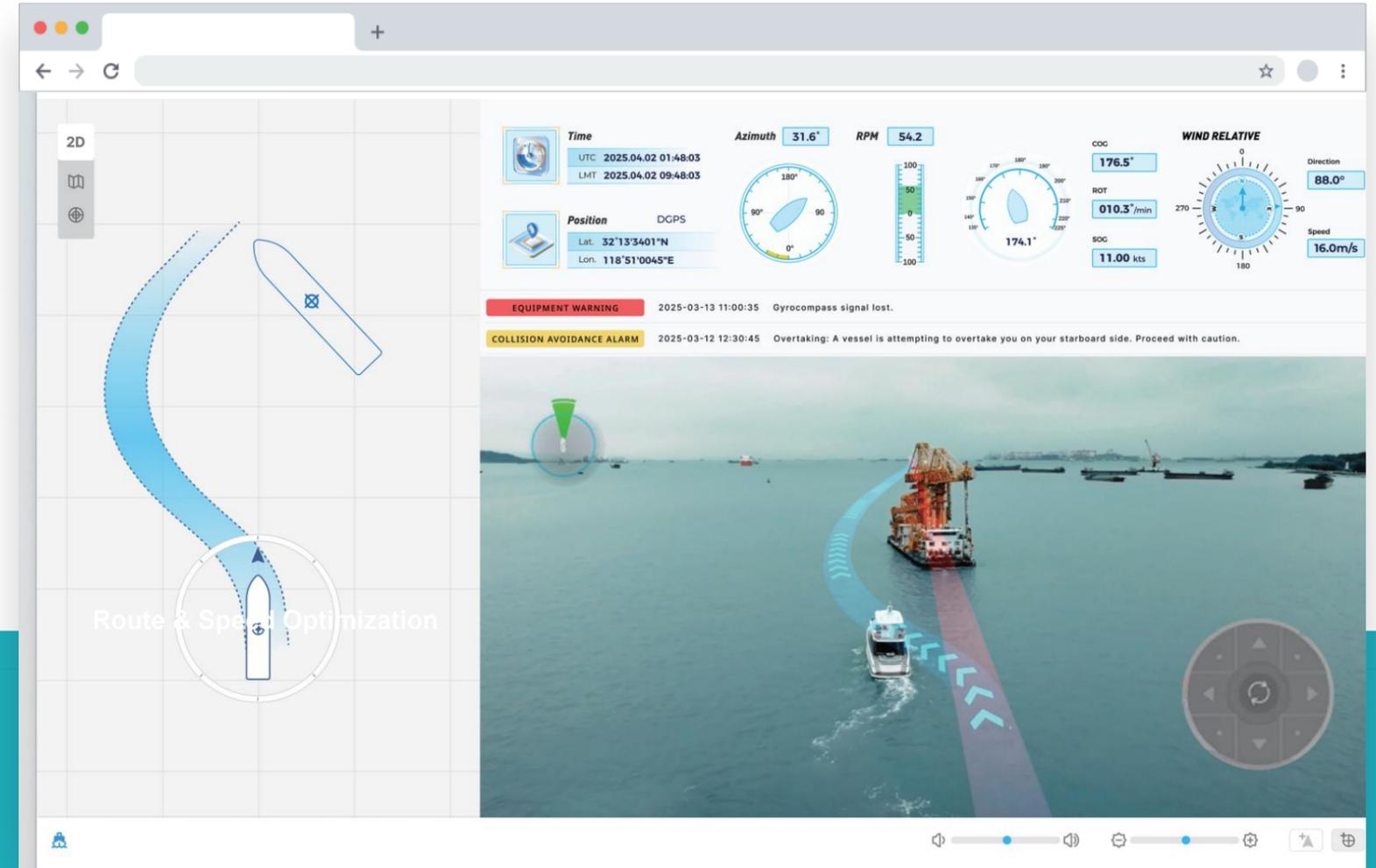
Integrated dashboard displaying navigational alerts/environmental data.



Intelligent Navigation Network Topology



Interface Presentation



○ Safety Warning:

Optimizes route and speed based on vessel technical performance and navigation conditions, while considering environmental factors such as wind, waves, currents, and swells.

YOUR SHIP'S GUARDIAN IN THE DIGITAL AGE

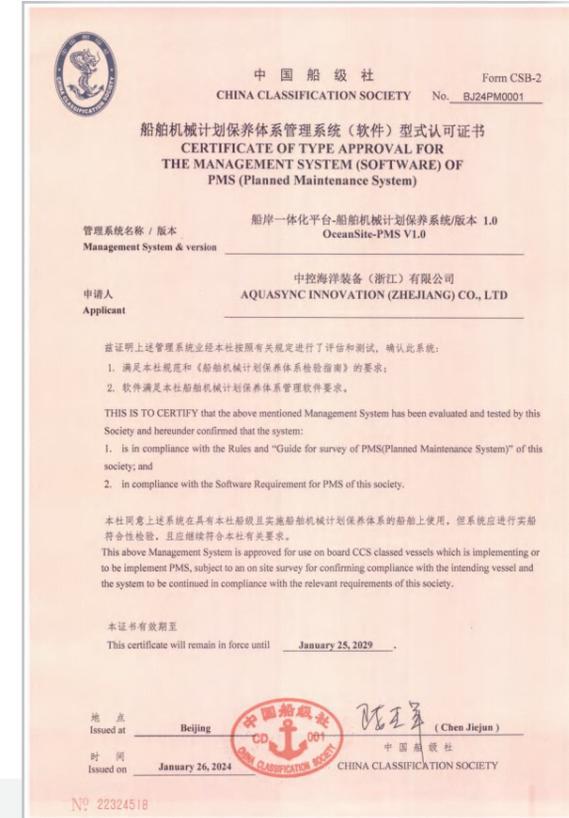
3.1 Cybersecurity Management Platform

3.2 Intelligent Ship System

3.3 Ship-Shore Fleet Management System



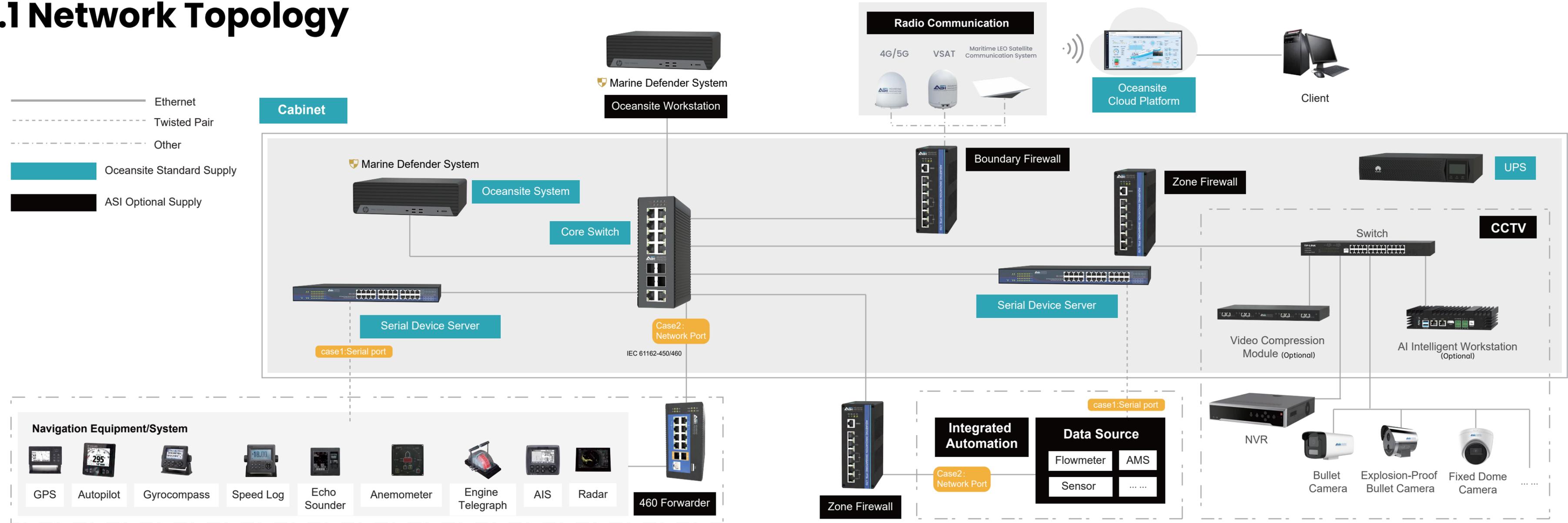
Certificate Of Type Approval Forthe Management System (Software)ofpms (Planned Maintenance System)



AquaSync Innovation MRV Energy Efficiency Management System



3.3.1 Network Topology



3.3.2 Infrastructure

Oceansite Standard Supply

01



Oceansite Platform Server

02



UPS (Information and Oceansite Standard Supply)

03

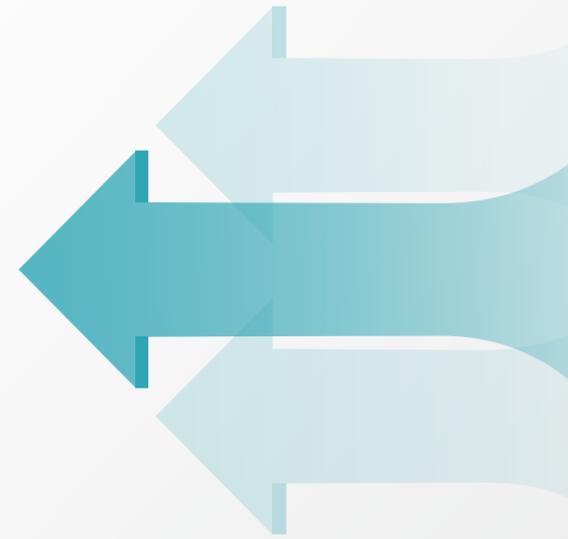


Serial Device Server

04

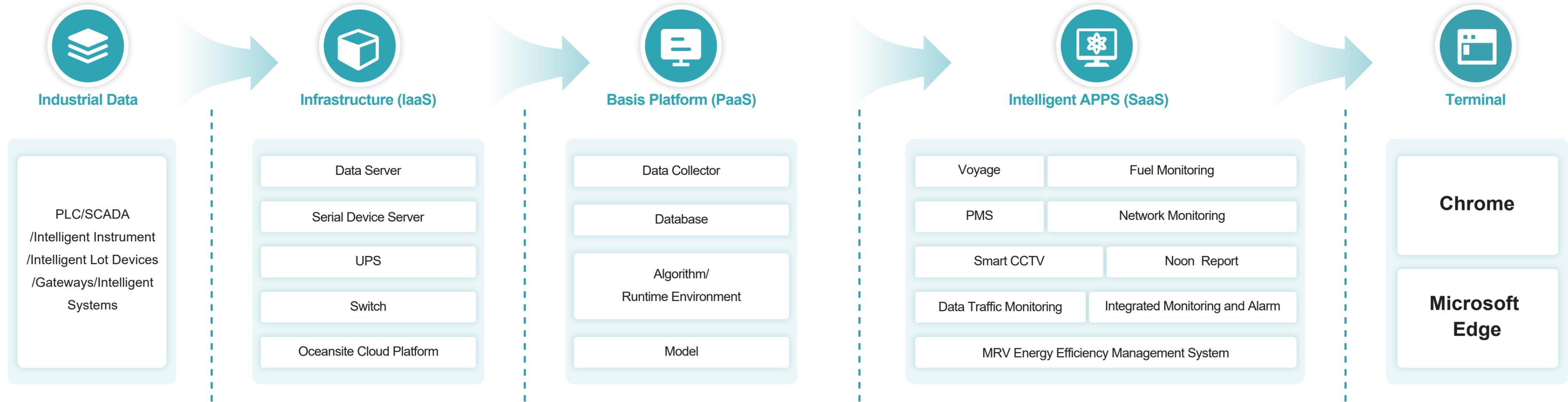


Core Switch



ASI Optional Supply	
01	VSAT Antenna Adapter
02	WLAN Access Controller Manager
03	LEO Satellite Power Supply Unit
04	VSAT billing gateway
05	Video Compression Module
06	AI Intelligent Workstation
07	PDU
08	CCTV Switch
09	LAN Switch
10	Switch Power Supply Unity
11	Micro Circuit Breaker
12	Firewall
13	Waterproof PoE Extender

3.3.3 System Architecture



3.3.4 Function Map

Basic Modules

Voyage	Navigational Attitude	Electronic Chart	ECA Warning
Data Traffic Monitoring	5G/SAT/Starlink Traffic Details	Online Recharge	
CCTV	Real-Time Preview	Historical Playback	
Integrated Monitoring and Alarm	AMS	Cargo Control System	Level Gauging System
	Valve Remote Control		

Extended Modules

Smart CCTV	Monitoring Overview	Real-time Preview	Historical Playback
	Unsafe Behavior Alarm		
MRV Energy Efficiency Management System	Parking Information Management	IMO/EU/UK Emissions Report	SEEMP III
	Efficiency Analysis	CII Calculation	
Electronic Record Book	Filling and Printing	Built-in Standard Templates	
Network Monitoring	Network Diagnostics	Equipment Status Monitoring	Traffic Data Analysis
Noon Report	WeChat Push	Report Details	
Planned Maintenance System	Spare Parts Management	Equipment Maintenance and Upkeep	
Fuel Monitoring	Fuel Consumption Monitoring	Fuel Information Management	Energy Efficiency Data Analysis

3.3.5 Basic Modules



Basic Function

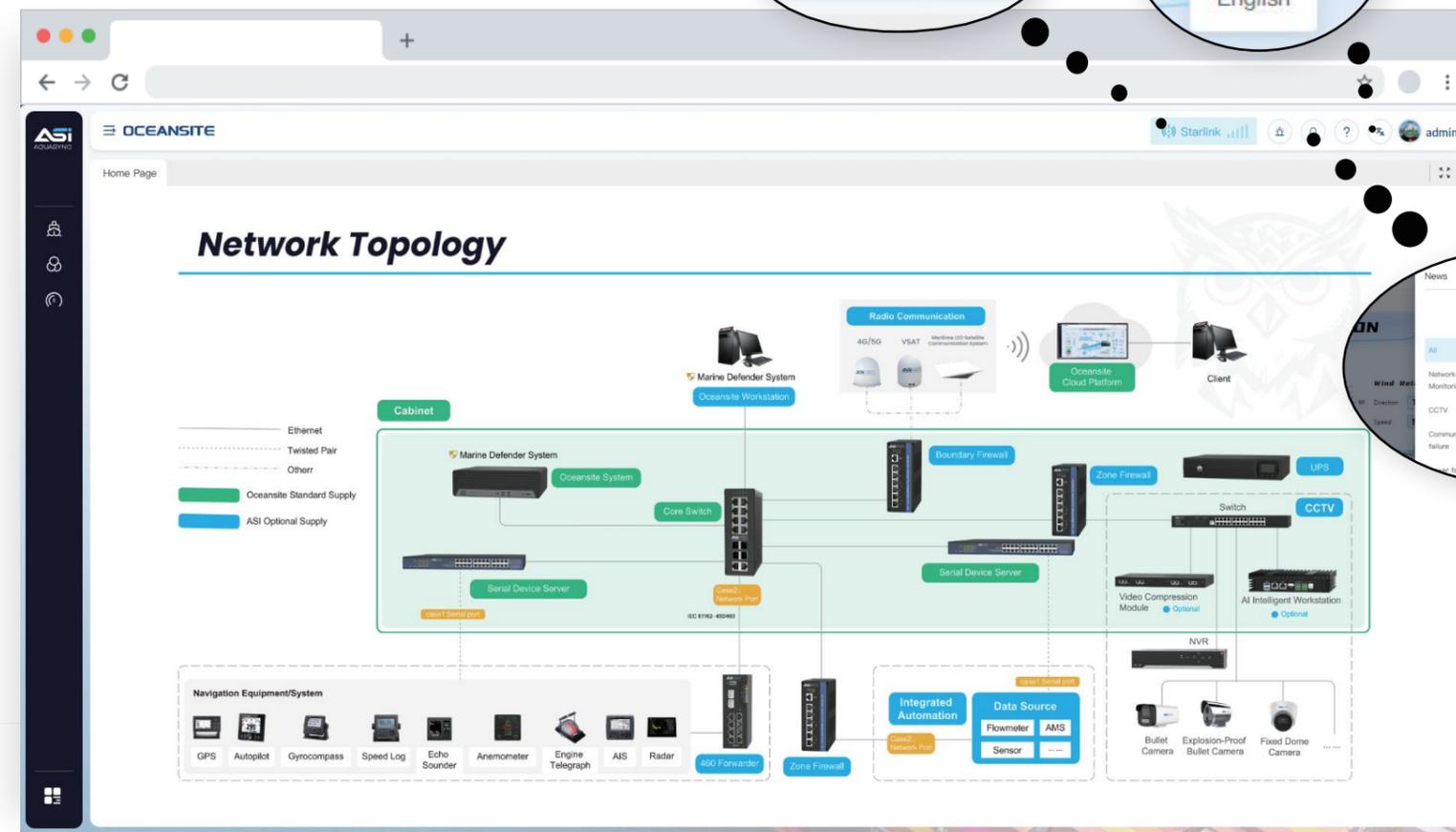
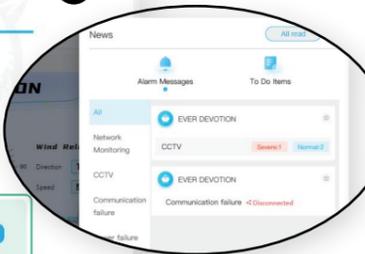
Signal Strength



Language Switching

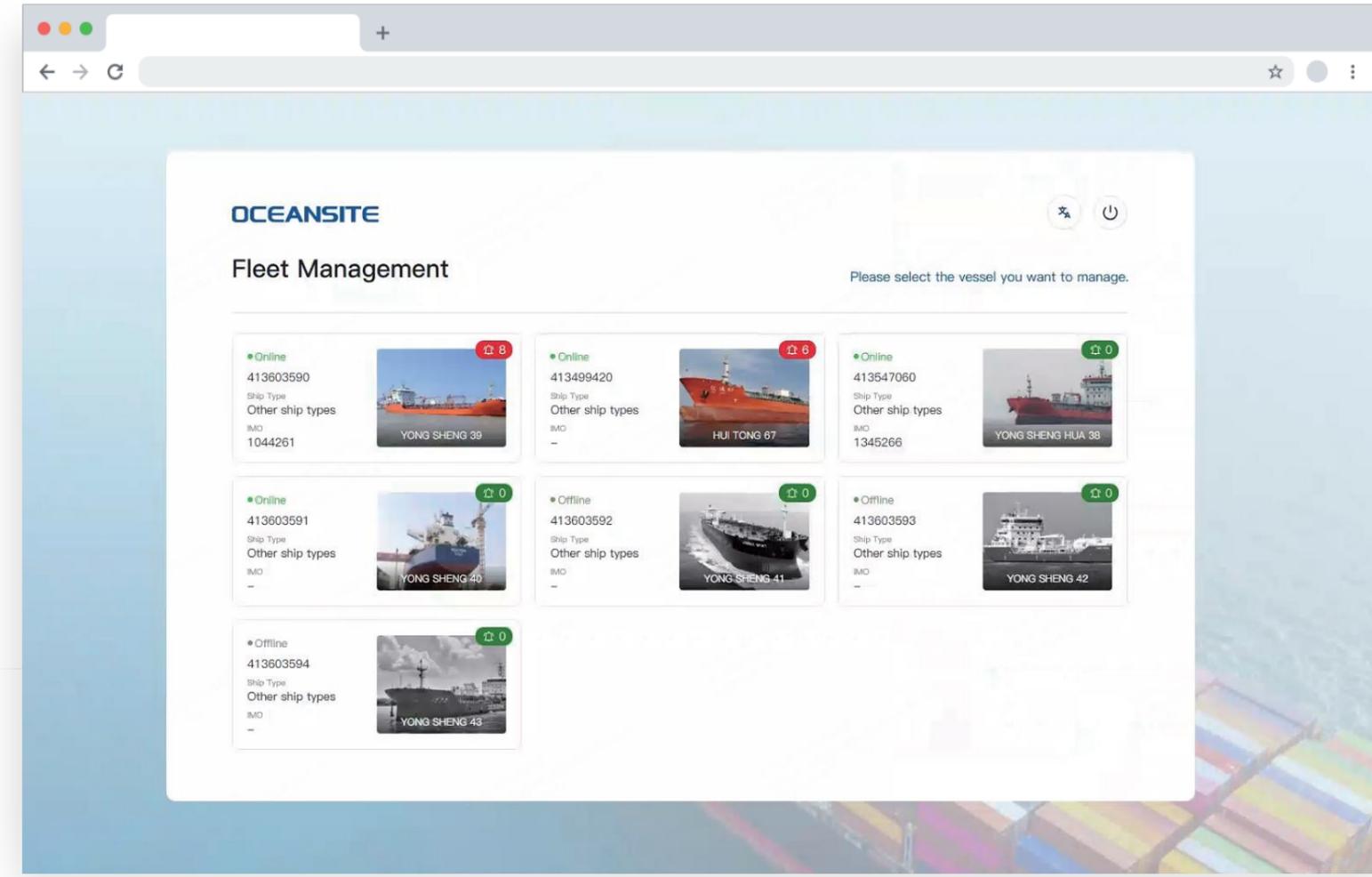


Notification



Typical network topology of ship-shore integrated solutions.

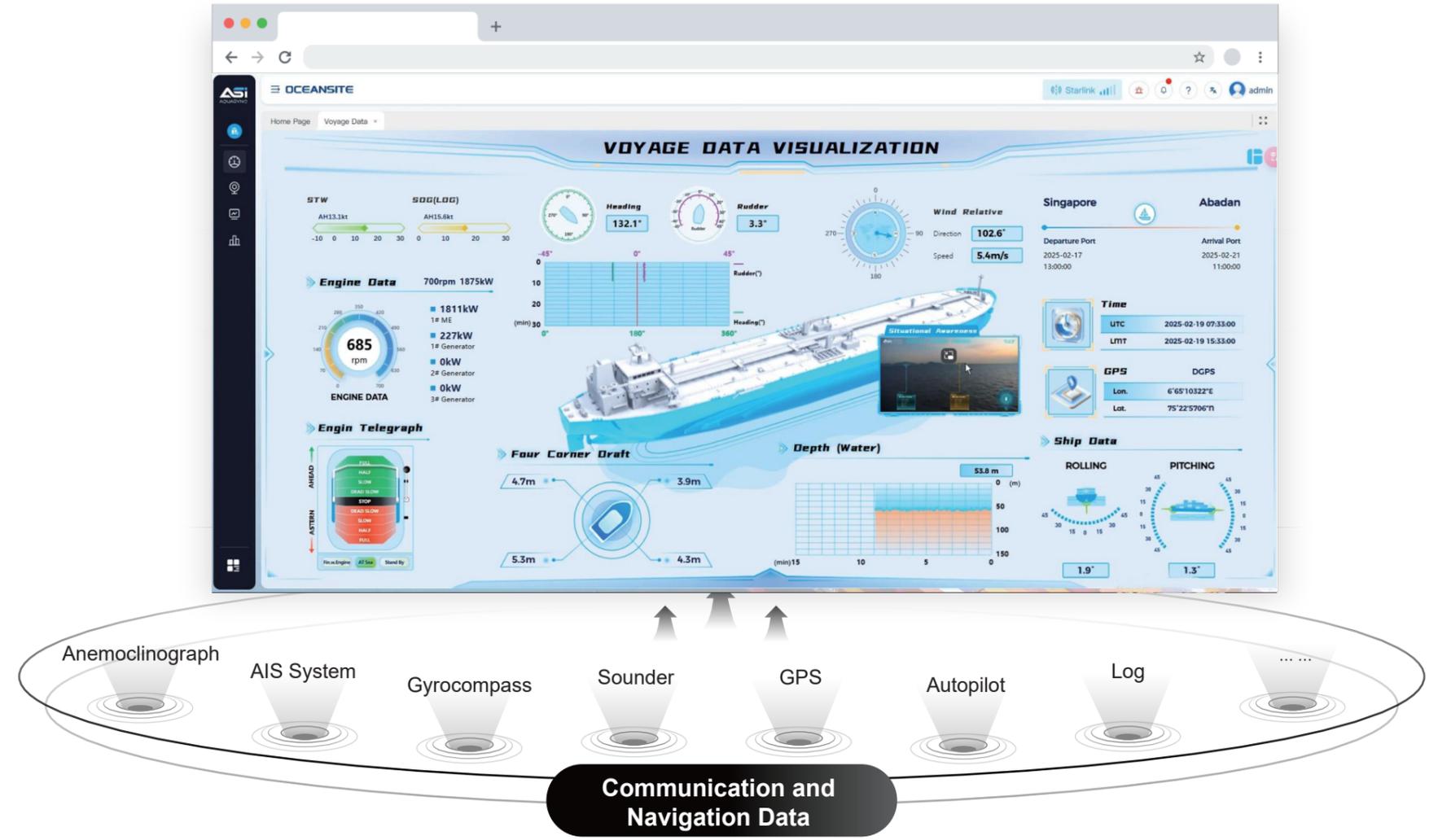
Fleet Management



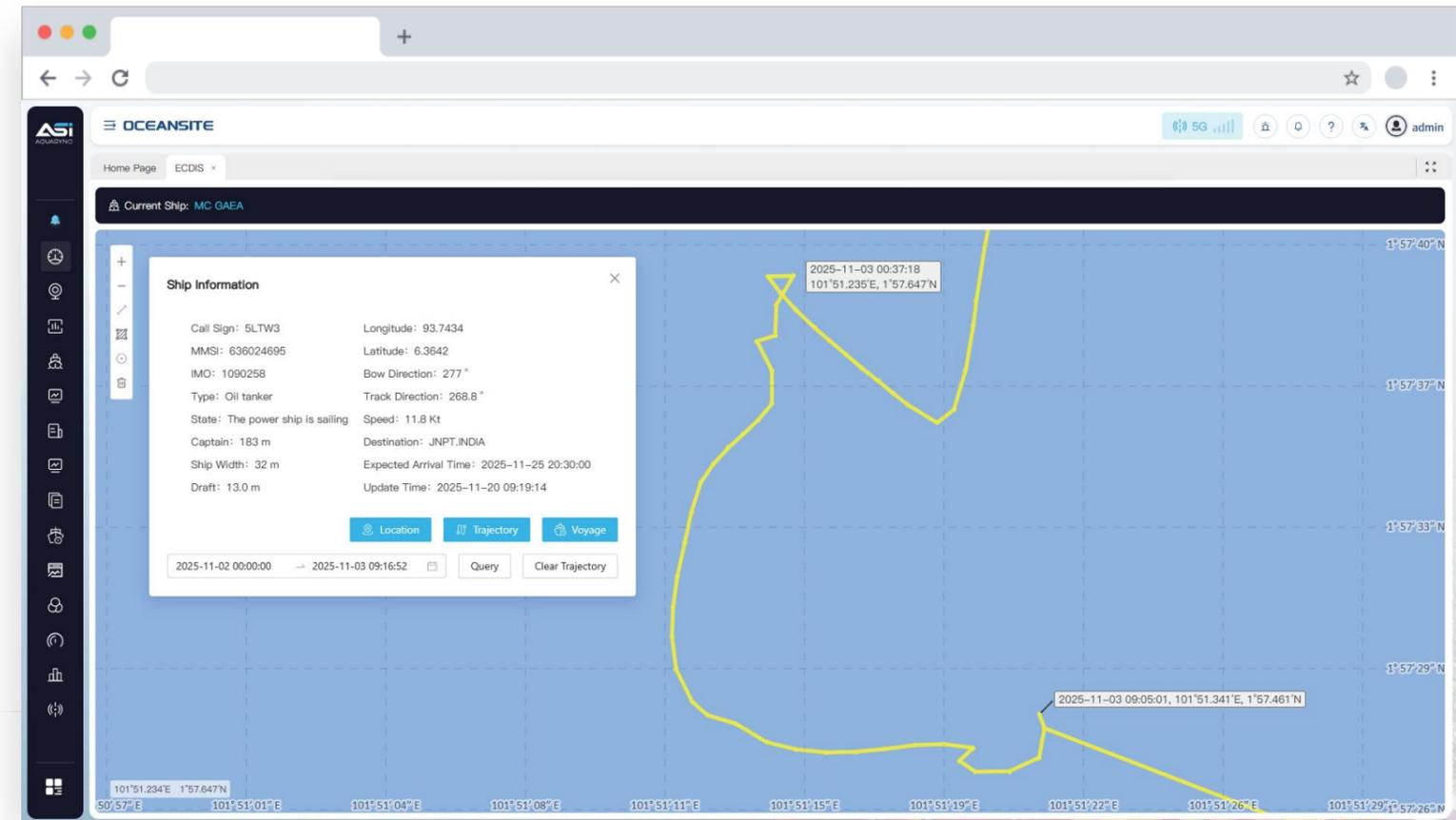
○ Fleet List

Displays basic fleet information, as well as the current network status and critical alarms of the vessels.

Voyage Data Visualization

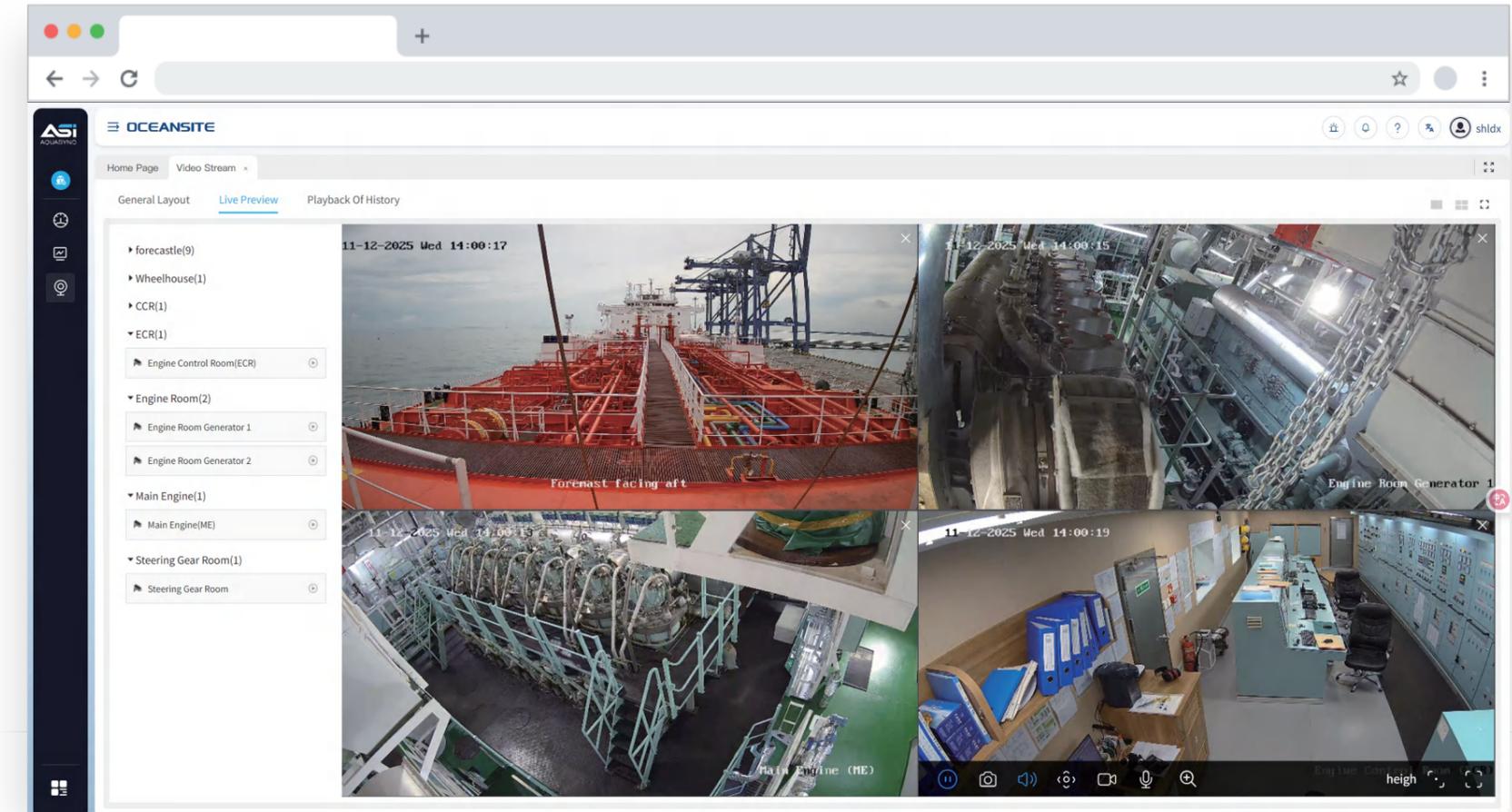


Electronic Chart



- Global Online Nautical Chart
- Ship Position Information
- Trajectory Information
- Display of Signal Overlay Trajectory

CCTV

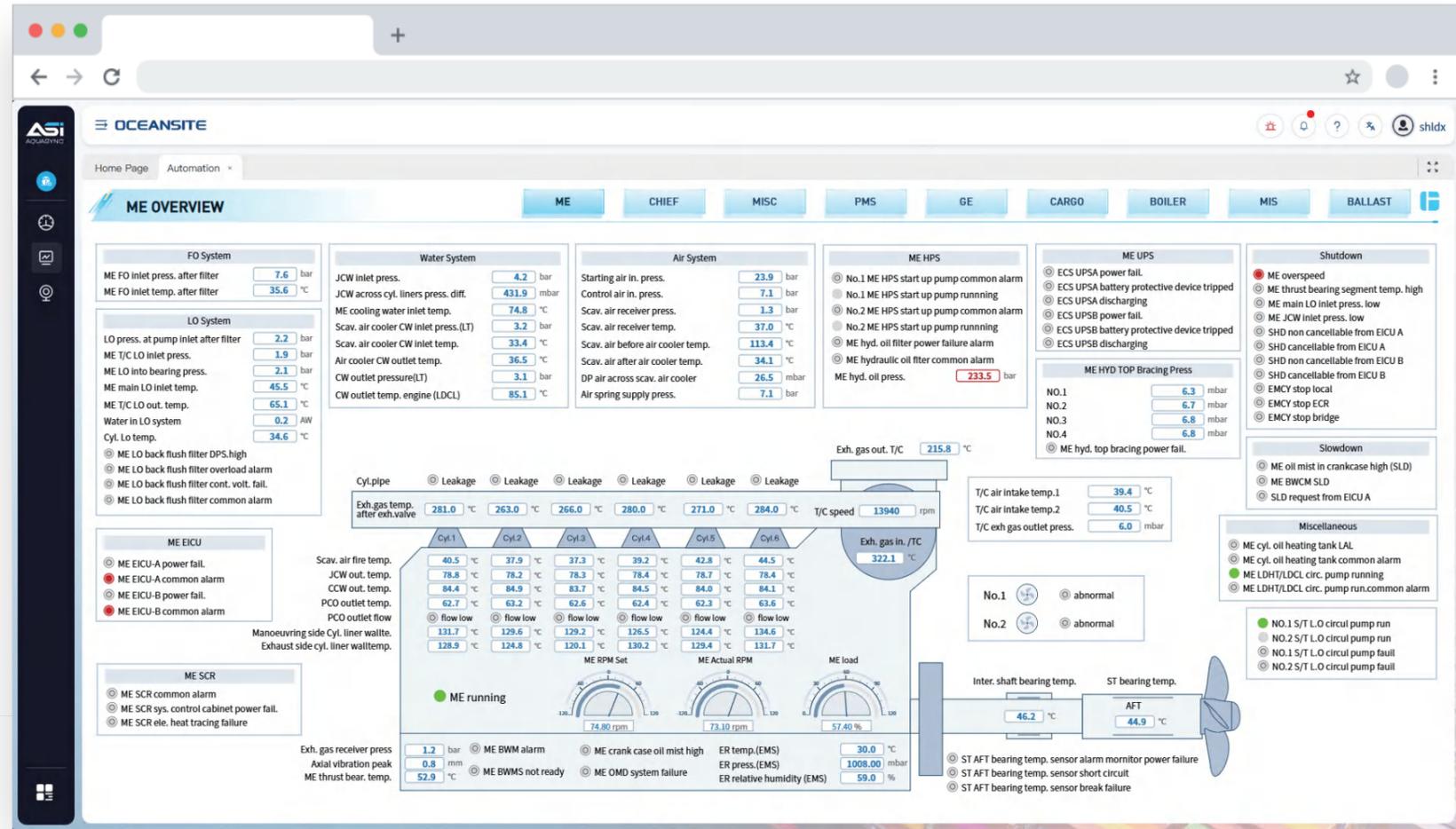


CCTV remote access

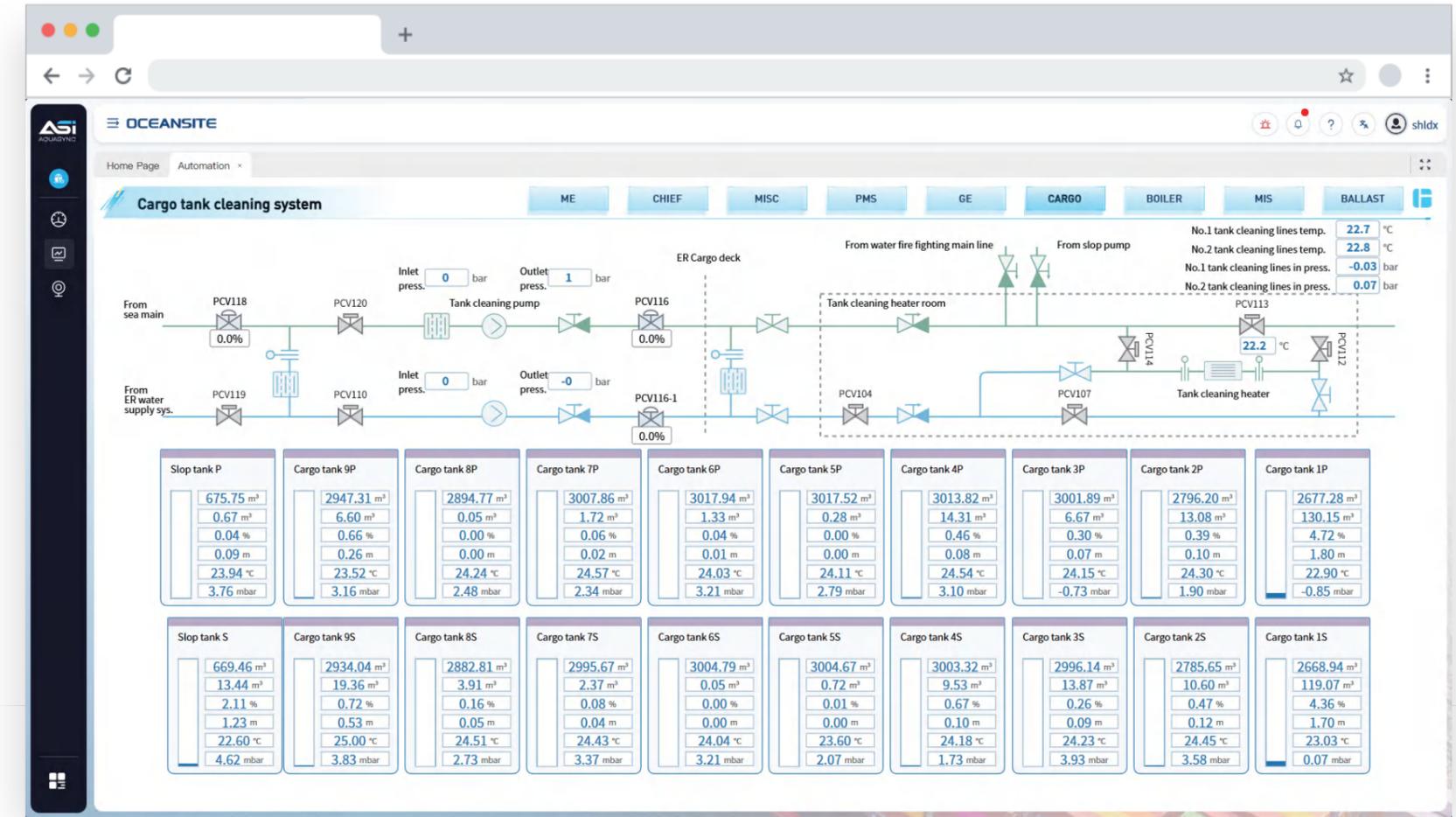
Easily access live and replay videos from different areas of a ship, supporting functions such as screenshotting, intercom, and PTZ control.

Comprehensive Monitoring and Alarm

Multiple people at the shore station can view monitoring alarm information in real time.

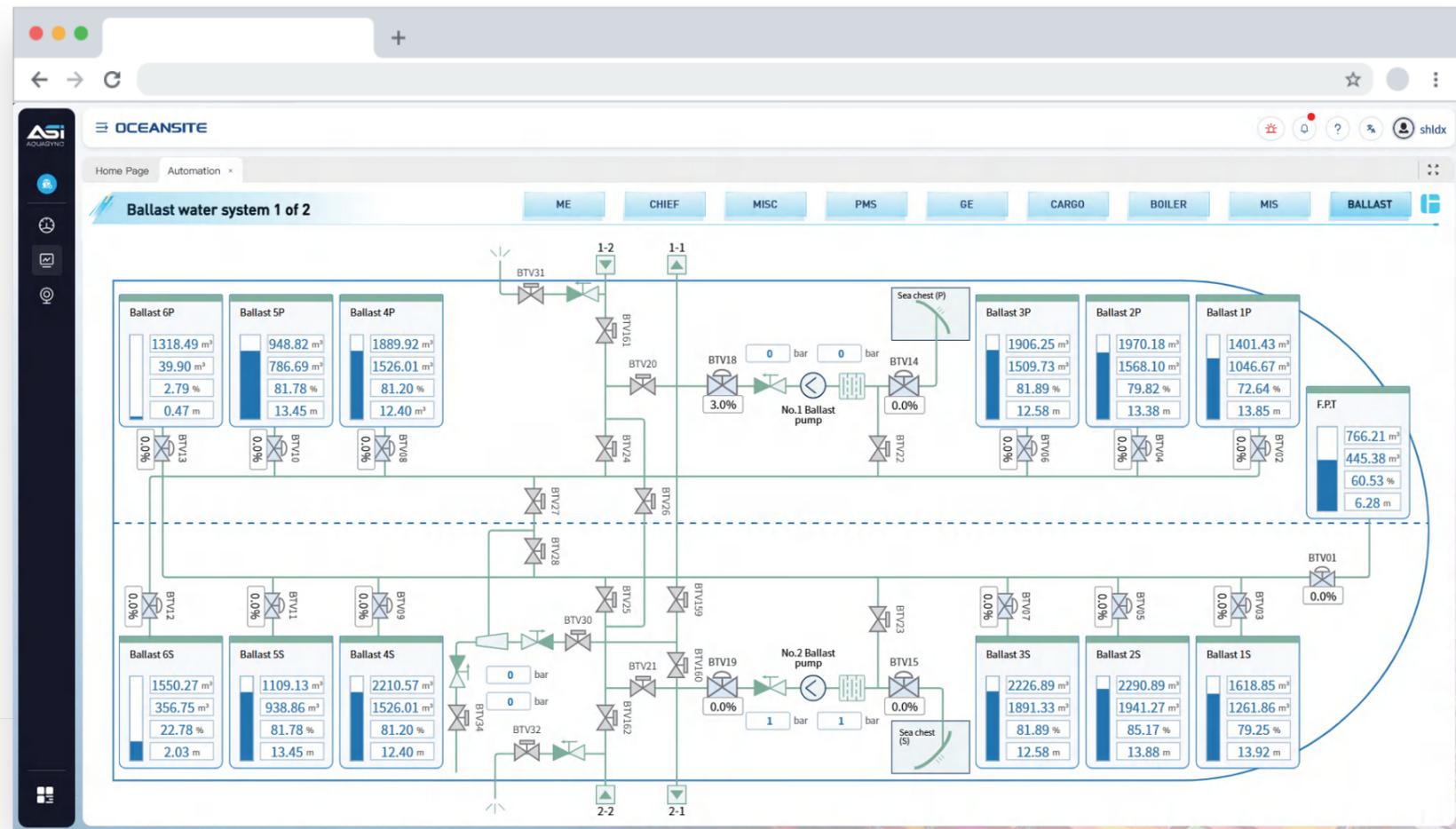


AMS

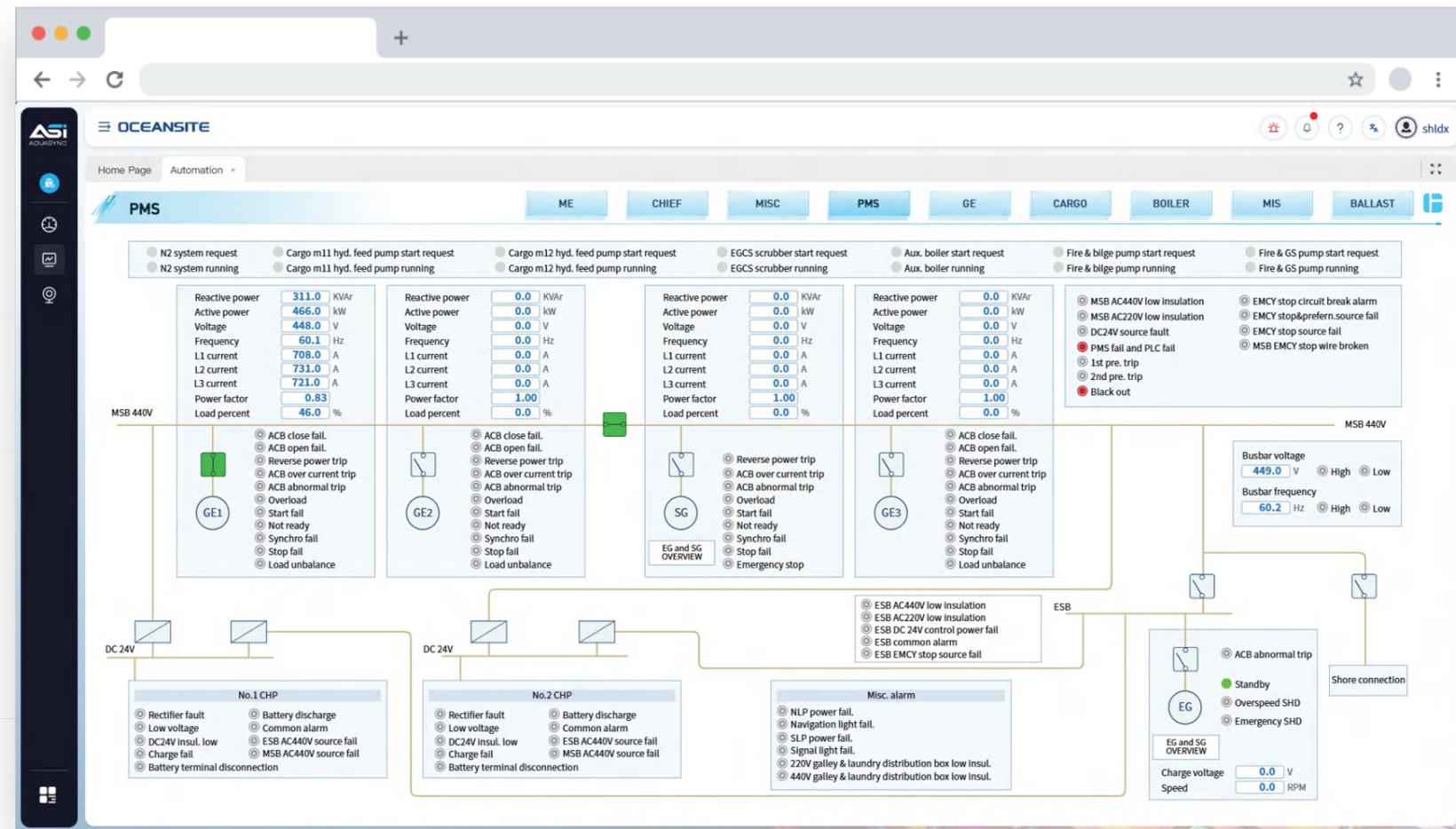


CMS

Comprehensive Monitoring and Alarm



VRC&LGS

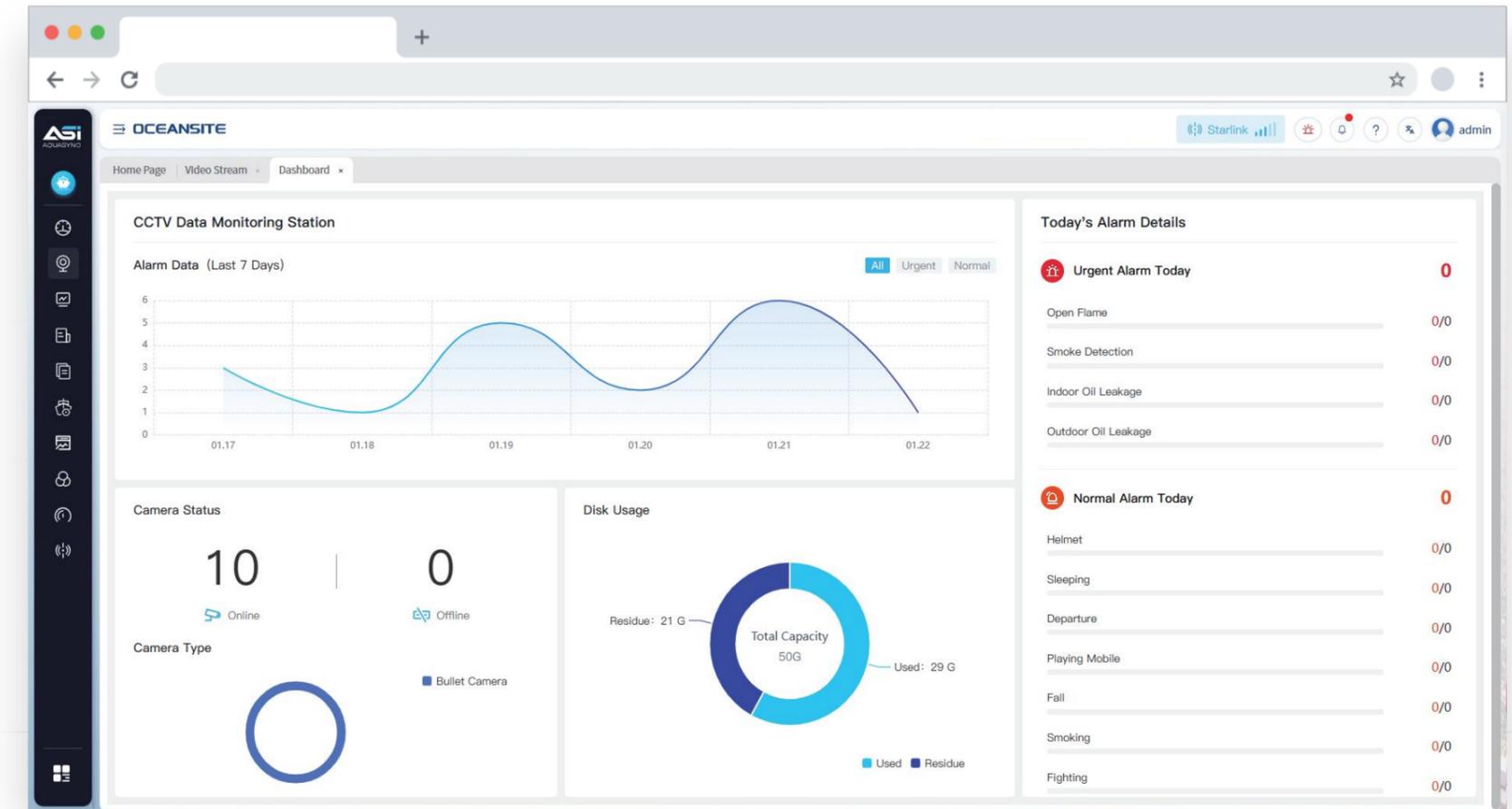


PMS

3.3.6 Extended Modules

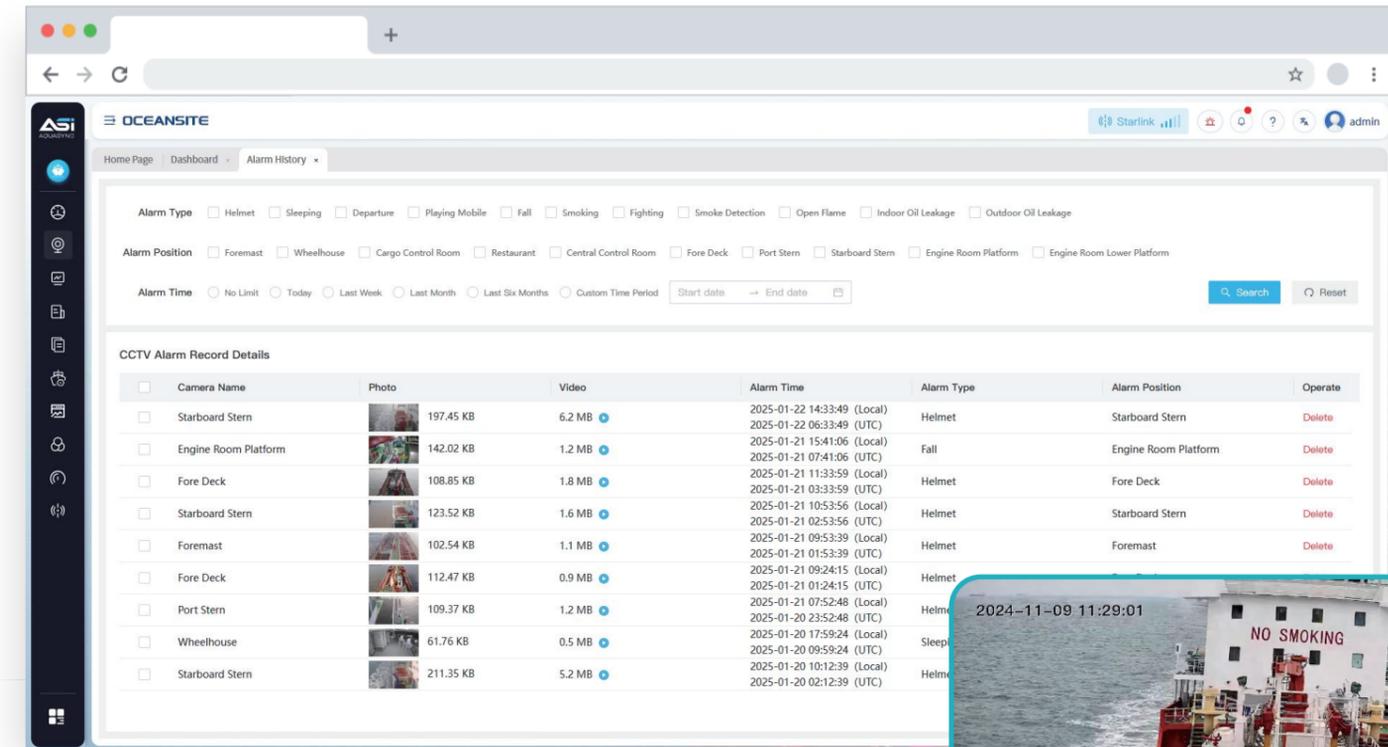
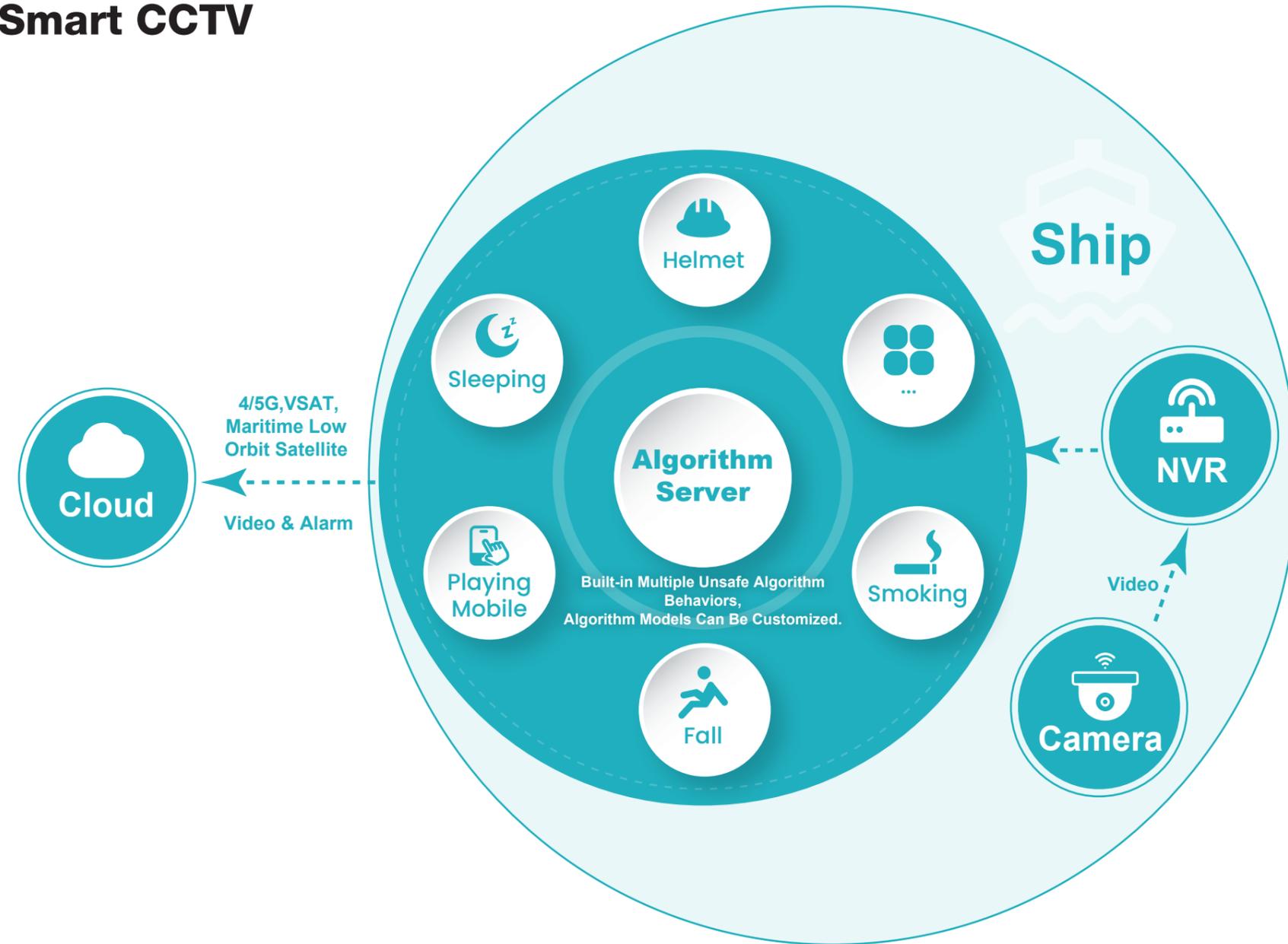


Smart CCTV



- Monitoring Overview
- 1.Alarm Statistics
- 2.Camera Status
- 3.Disk Usage

Smart CCTV



Alarm Notification

Video alarms for unsafe behaviors can be alerted in real-time through system messages.

Alarm Record

The system will automatically record screenshots and video clips of unsafe behaviors and support preview.



Unsafe Behavior Photos

MRV Energy Efficiency Management

Edit Arrival And Departure

* Port(En)	Port Hedland, Wa	Port(Cn)	德黑兰港	Port In/Outside	Inside
* Voyage NO. (Arrival)	V67	* Arrival Time	2024-11-24 19:12:00	* Arrival Time Zone	East 8Zone
* Voyage NO. (Departure)	V67	* Departure Time	2024-11-25 20:24:00	* Departure Time Zone	East 8Zone
Port Type	IMO	* Shore Power Consumption	0,00	* Distance to berth (nm)	3816.50

* Purpose of... Loading Cargo/P... Discargin... Ship-To-Ship... Waiting fo... Refu... Obtaining s... Making ... Crew repla... Taking ... Other Re...

	Cargo Onboard	Total TEU.	Cargo Units	Heavy TEU.	Heavy reefer c...	Heavy reefer c...	Passenger Num	Ballast
Arrival Cargo	0,00	0	0	0	0	0	0	52861,00
Departure Cargo	170643,00	0	0	0	0	0	0	598,00

Fuel Information Bunkering Quantity De-bunkering Quantity Oil Residue Handling Capacity

Fuel Type	Fuel Onboard of Arrival	Fuel Onboard of Departure	Bunkering Quantity	De-bunkering Quantity Correction	Fuel Consumption In
HFO (HS)	1725,19	1725,19	0,00	0,00	0,00
HFO (LS)	250,48	244,90	0,00	0,00	5,58
HFO (ULS)	0,00	0,00	0,00	0,00	0,00
LFO (HS)	0,00	0,00	0,00	0,00	0,00

Voyage Information

Cargo Information

Fuel Information

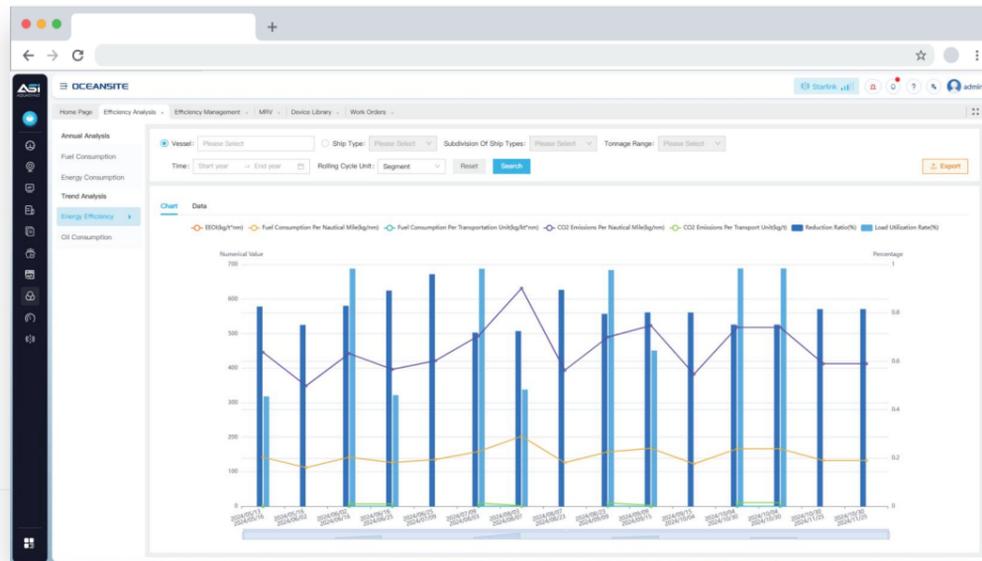
Time: 2024 Query Types: IMO European Union United Kingdom Reset Search

Time	Fuel Consumption per nauti...	CO2/Nautical Mile (t/nm)	* The Sea Oil Consumption Per ...	CO2 Emissions Per Ton * Sea (g/t * nm)	Daily F.O. at port(t)	Average Speed
2024-05-13-2024-05-16	0.1324	0.4151	1.6183	5.0736	34.1103	10.7368
2024-05-16-2024-06-02	0.1098	0.3421	0	0	25.6777	9.7485
2024-06-02-2024-06-16	0.1389	0.4326	0.7848	2.4444	35.9256	10.7765
2024-06-16-2024-06-25	0.1208	0.3793	1.4592	4.5744	33.6314	11.5962
2024-06-25-2024-07-09	0.1327	0.4137	0	0	39.7491	12.4777
2024-07-09-2024-08-03	0.1569 ↑	0.4885	0.8868	2.7611	35.1564	9.3382
2024-08-03-2024-08-07	0.1468 ↑	0.4570	1.6890	5.2580	33.1758	9.4192
2024-08-07-2024-08-23	0.1231	0.3834	0	0	34.3841	11.6355
2024-08-23-2024-09-09	0.1546 ↑	0.4815	0.8785	2.7362	38.3764	10.3417
2024-09-09-2024-09-15	0.1454 ↑	0.4528	1.2533	3.9030	36.3757	10.4236
2024-09-15-2024-10-04	0.1207	0.3758	0	0	30.1801	10.4204
2024-10-04-2024-10-30	0.1621 ↑	0.5046	0.9152	2.8489	37.9792	9.7652
2024-10-30-2024-11-25	0.1311	0.4081	0	0	33.3374	10.5984

Total [13] Records

Data Assessment: Provides energy efficiency data and over-limit warnings for flight segments.

MRV Energy Efficiency Management



Energy Efficiency Trend Analysis

- EEOI
- CO2 Emissions Per Nautical Mile
- Fuel Consumption Per Nautical Mile
- CO2 Emissions Per Transport Unit
- Fuel Consumption Per Transportation Unit
- Load Utilization Rate

EU,UK,IMO Annual MRV Report Generation

Compliant with EU, UK MRV Regulations and MEPC.278 (70)

Year	Annual Required CI	Annual Attached CI (Before any amend...)	Annual Attached CI	Attained CI rating(A, B, C, D or E)
2020	2.5287	2.53	2.53	C
2021	2.5032	2.51	2.51	B
2022	2.4777	2.47	2.44	B
2023	2.4366	2.12	2.12	B
2024	2.3755	2.09	2.08	B
2025	2.3044	2.01	1.98	A

Fill in Ship Energy Efficiency Management Plan Part III

Makes it easier for users to fill out and create energy efficiency plans.

CI Calculation and Rating

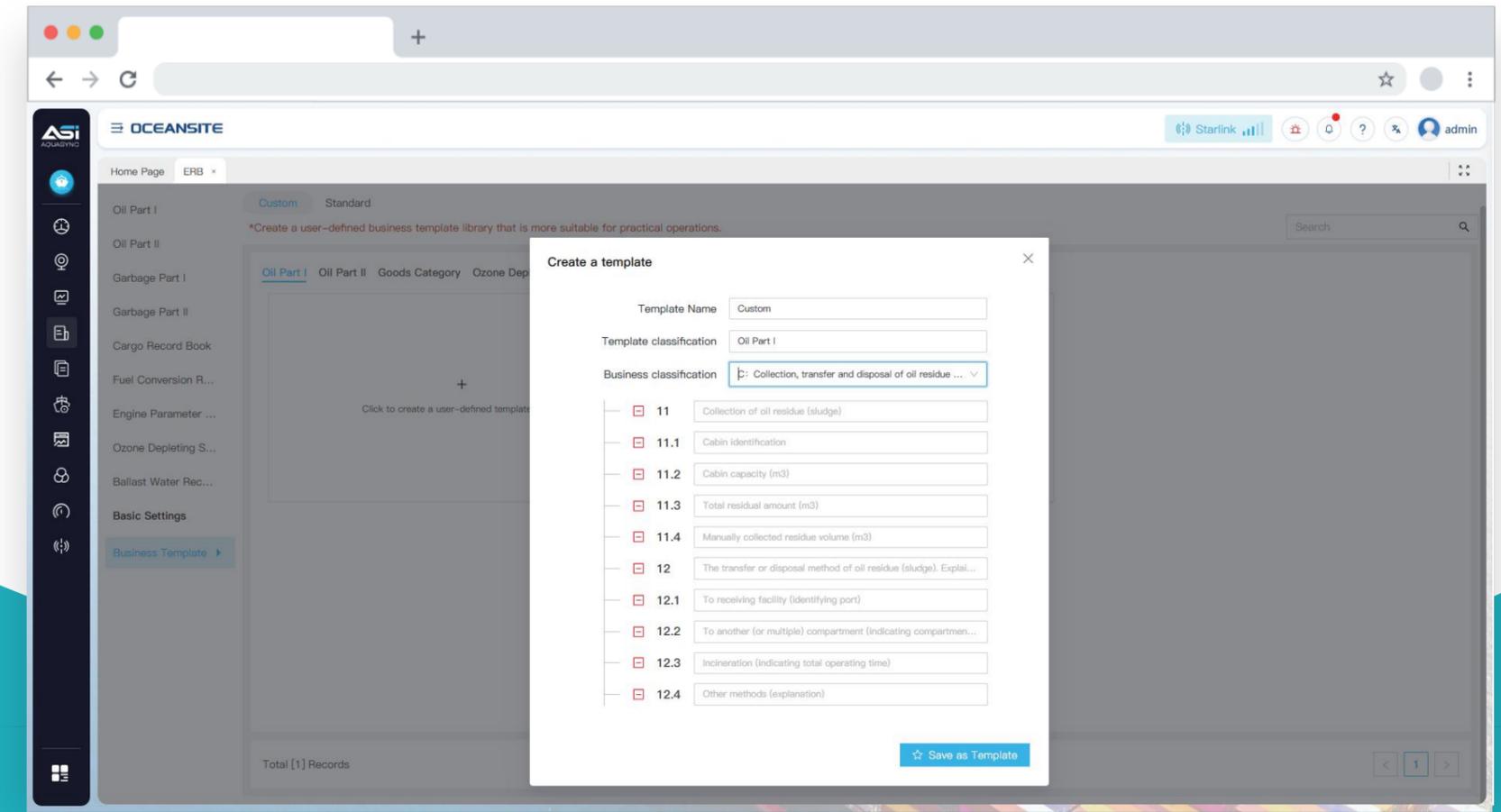
Complete the annual energy efficiency data compilation and CI rating.

Voyage Adjustment	Selling Distance	HFO	LFO	MDG/MSO	LPG(Propane)	LPG(Butane)	LNG	Methanol	Ethanol
Securing ship safety	232.00	120.00	0.00	35.00	0.00	12.03	0.00	0.00	0.00
Saving of life at sea	150.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Selling in ice conditions	64.00	67.00	45.35	11.20	2.23	21.30	9.54	0.12	10.23
ciCalculation:PageGrade:709746-2	446.00	687.00	45.35	46.20	2.23	33.33	9.54	0.12	10.23

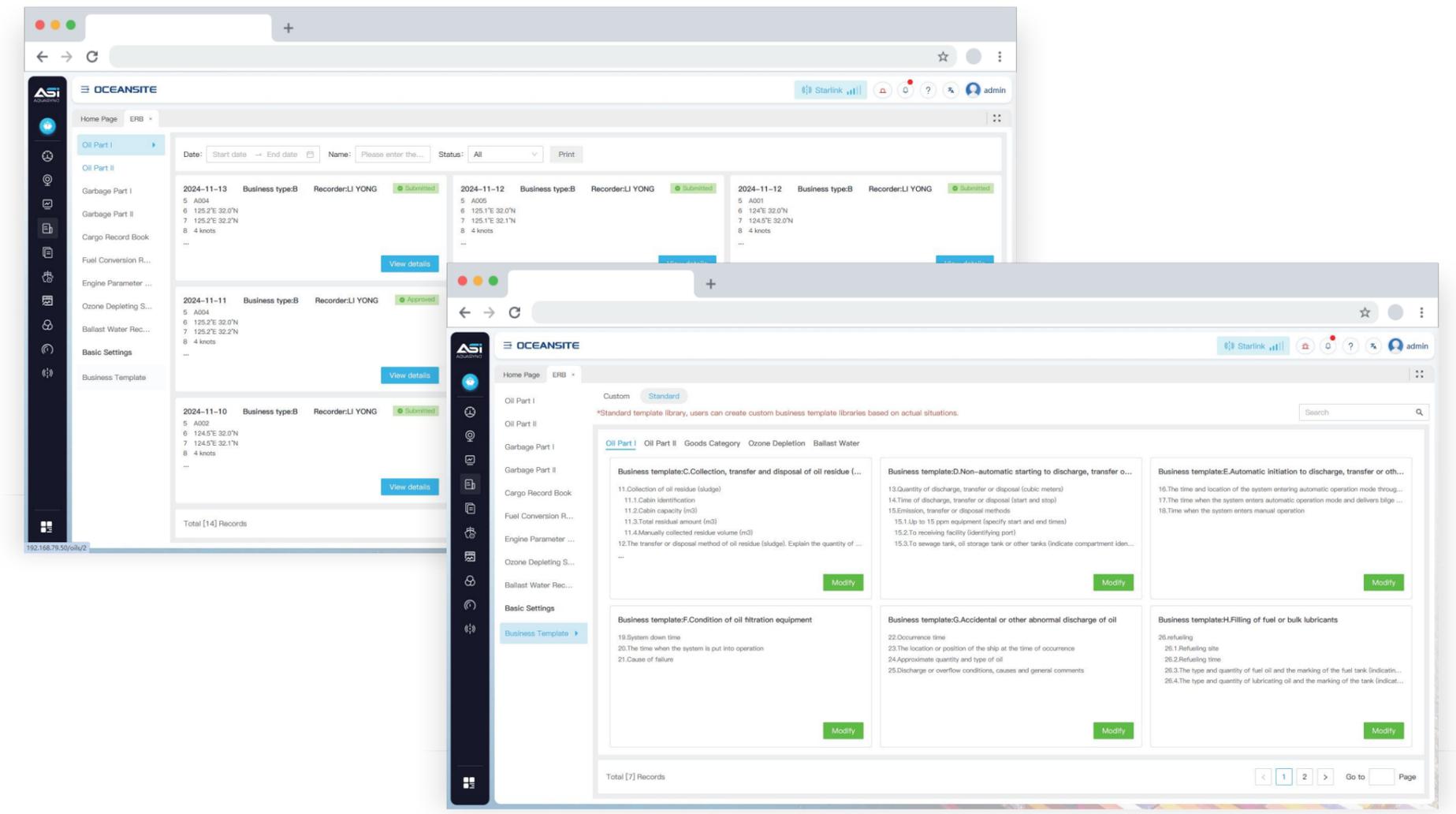
Electronic Record Book

Compliant with the marpol convention

Oil, garbage, cargo, fuel conversion, engine parameters, ozone depleting substances, and ballast water record books.



The system has a built-in record book template for easy filling.

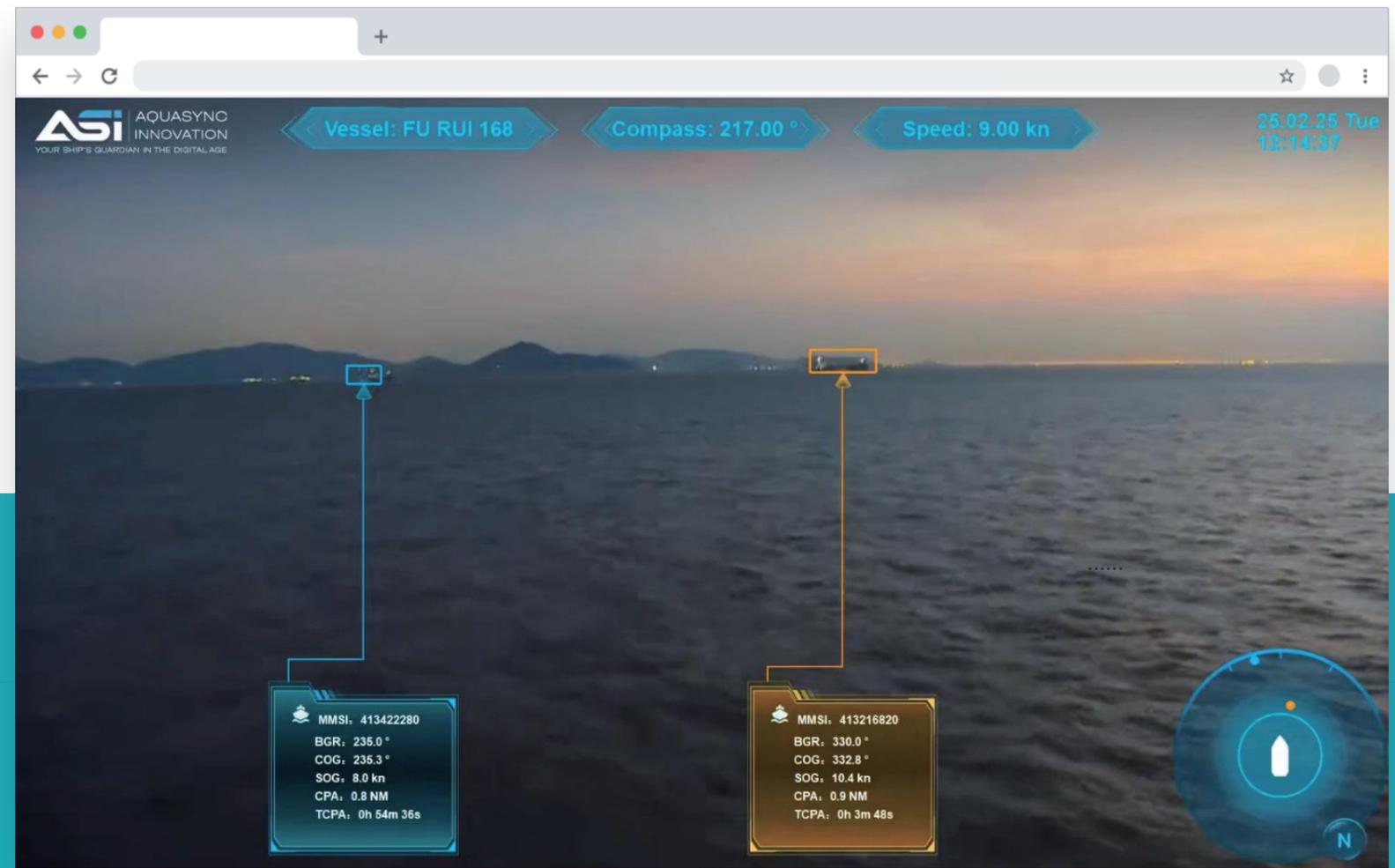


- Quick Search
- Easy to Record
- Content Printable
- Traceability

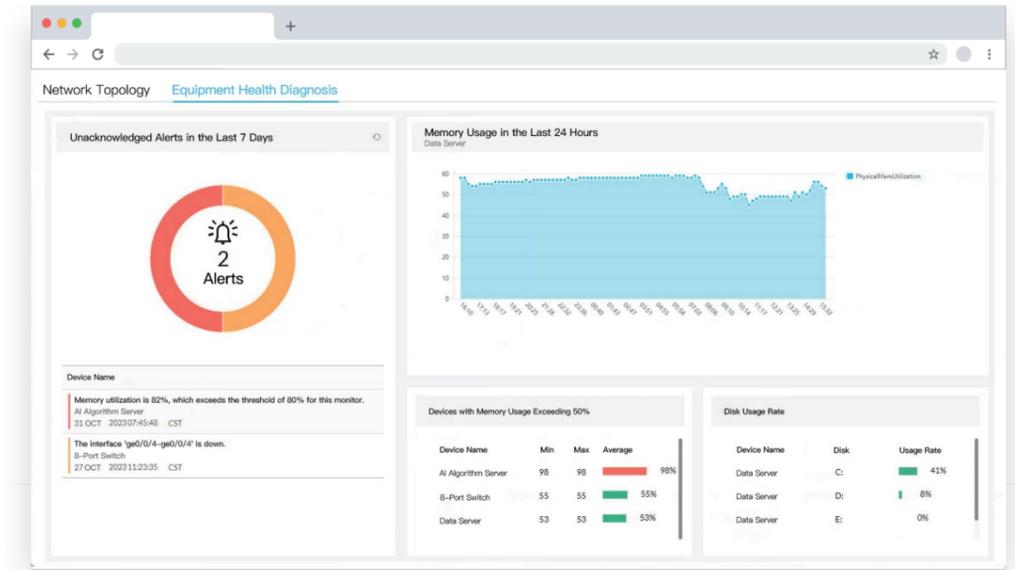
Situational Awareness

Target Identification

Enhances environmental perception by integrating multi-source data such as radar, AIS, and sensors to identify potential risk targets within the navigation area.

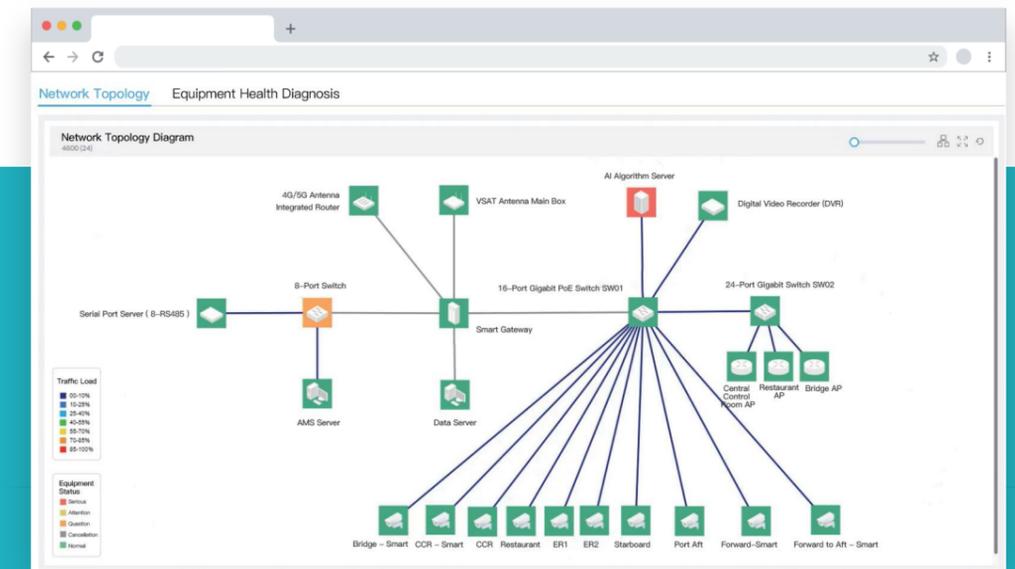


Network Monitoring



Equipment Status Monitoring

1. Display the operating parameters of core network equipment.
2. Issue alarm notifications for abnormalities.



Network Topology Diagram

1. Monitor the connectivity status of network devices on the entire ship.
2. Promptly discover and assist in solving network problems.

Noon Report

The screenshot displays the OCEANSITE Noon Report interface. It includes a sidebar with navigation options like 'Report Type' and 'Date Island'. The main content area shows a 'Noon Report' form with fields for Date, Location, and Next Port. Below this are several data tables: 'Operational Data' (Ship Voyage, Mileage since last voyage), 'Navigation Data' (Course, Wind Direction, Wave Height), 'Energy Report' (HFO, LFO consumption), and 'Inventory energy situation'. A 'Template configuration' window is overlaid on the bottom right, showing a list of available placeholders (e.g., \$Date Time\$, \$Lon\$, \$Ship Voyage) and a list of real data that supports these placeholders.

Custom Message Template

Customize midday report information and send it on a schedule.

Fuel Monitoring

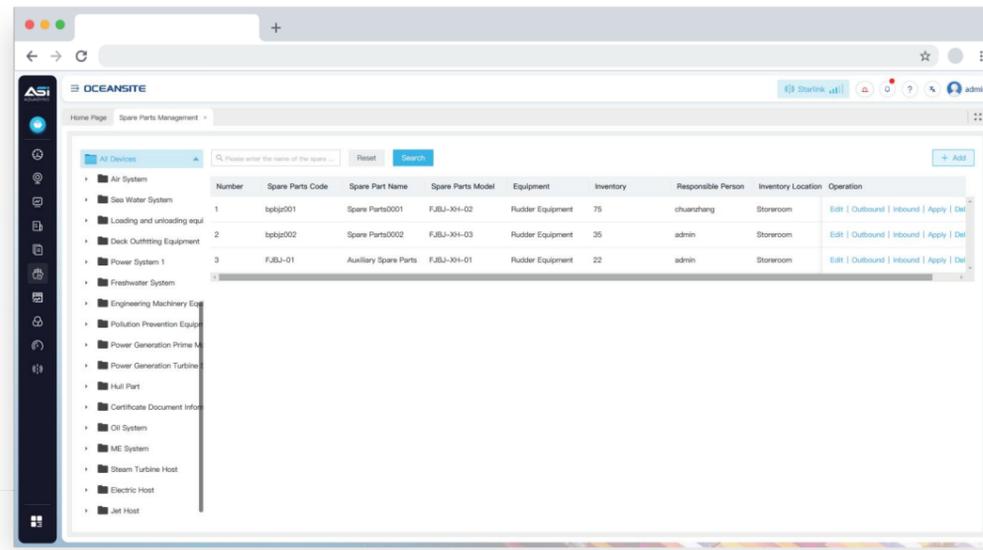
The screenshot shows the OCEANSITE Fuel Monitoring dashboard. At the top, it displays 'Instantaneous Fuel Consumption (kg/h)' for MainEngine 1 (145.49), MainEngine 2 (101.48), and Emergency Generator (0.00). Below this is a 'Fuel Consumption Distribution' donut chart showing the percentage contribution of each component: Boiler (4.26%), MainEngine 1 (7.67%), MainEngine 2 (23.86%), Emergency Generator (13.2%), Generator 1 (22.07%), and Generator 2 (28.94%). To the right, a 'Trend' line graph shows fuel consumption over time for each component, with the y-axis in kg and the x-axis showing dates from 2024-12-24 00 to 2024-12-24 23.

Real-Time Fuel Consumption Monitoring

Energy Efficiency Analysis & Optimization

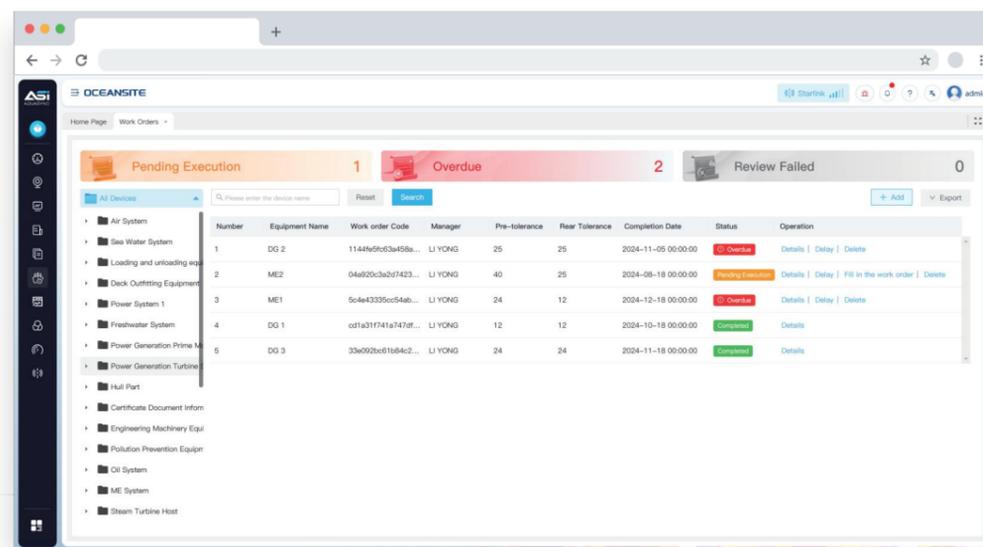
Refueling and Storage Management

Plan Maintenance System



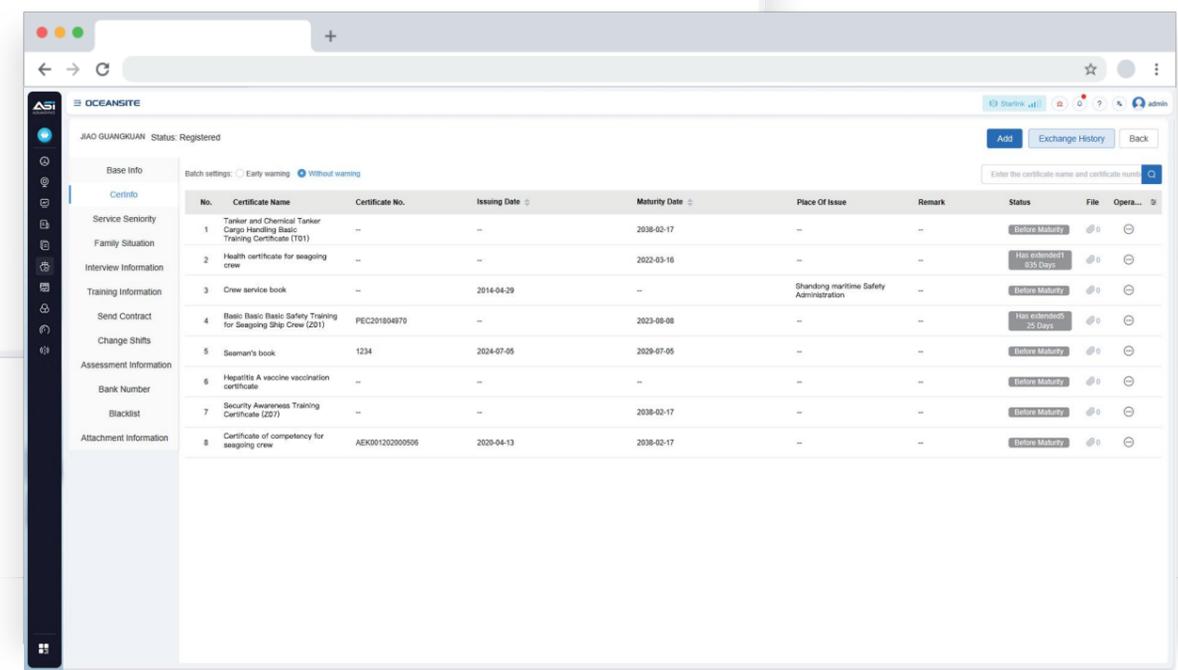
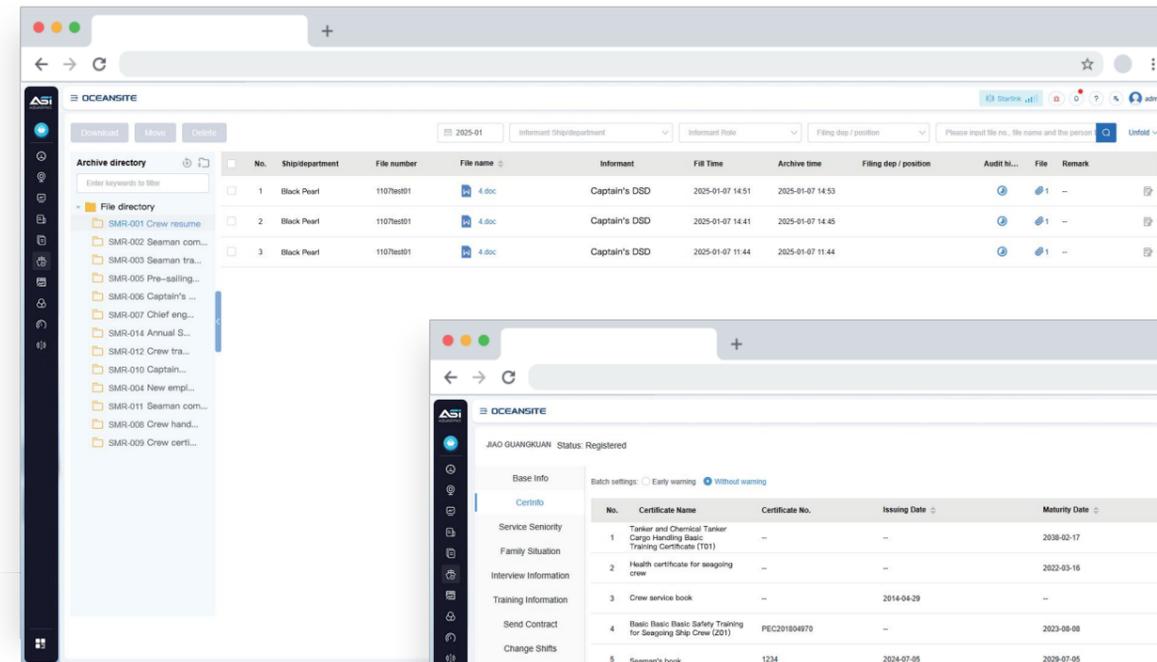
Maintenance Plan Generation and Warning

Spare Parts Management and Inventory Warning



Spare Parts Information Linkage

Filling Out and Approving Work Order Report



Crew Information Management

System Document Management