AQUASYNC INNOVATION

YOUR SHIP'S GUARDIAN IN THE DIGITAL AGE

YOUR SHIP'S GUARDIAN IN THE DIGITAL AGE

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AQUASYNC INNOVATION

YOUR SHIP'S GUARDIAN IN THE DIGITAL AGE

Ship-Shore

Informatization and Oceansite Platform Integrated Solution

DNV

CCS 中国船级社

AQUASYNC INNOVATION(SINGAPORE) PTE. LTD.

AQUASYNC INNOVATION
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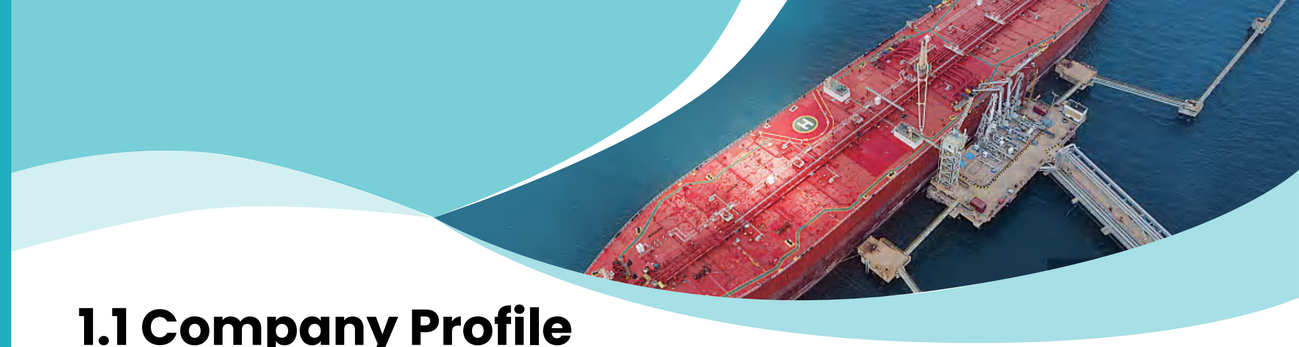
YOUR SHIP'S GUARDIAN IN THE DIGITAL AGE

Company Introduction

1.1 Company Profile
1.2 Global Service Network
1.3 Relevant Honors and Certifications

PART ONE



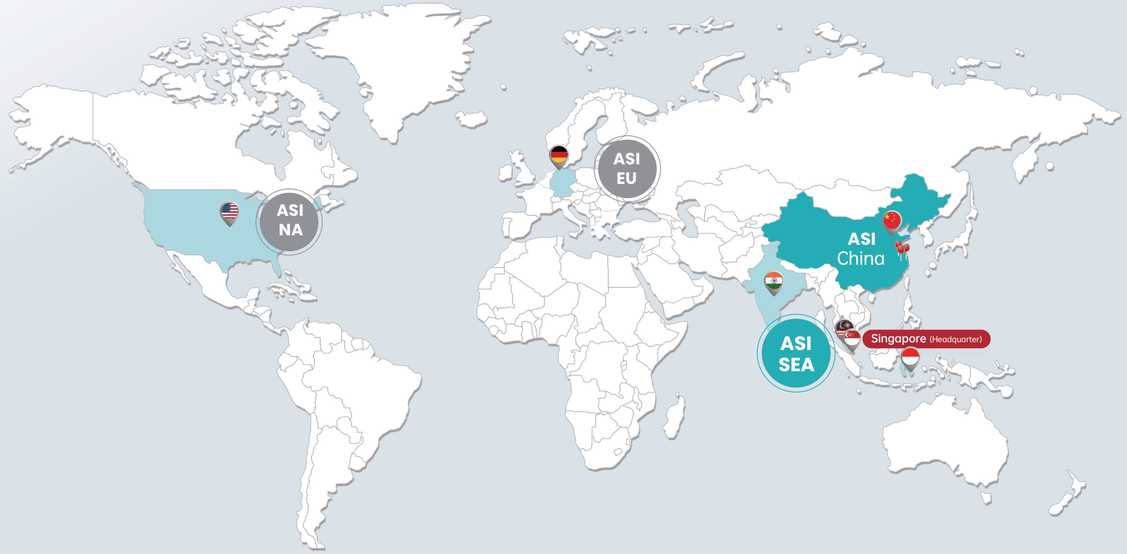
1.1 Company Profile

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
- India
- Indonesia
- Malaysia

ASI EU
- Germany, Hamburg

ASI NA
- America

1.3 Relevant Honors and Certifications

ISO 9001:2015

Quality Management System Certification

DNV

MANAGEMENT SYSTEM CERTIFICATE

This is to certify that the management system of
AquaSync Innovation (Zhejiang) Co., Ltd.
Room1808, Ping'an Fortune Center, Binhu District, Wuxi, Jiangsu, China
and the sites as mentioned in the appendix accompanying this certificate

has been found to conform to the Quality Management System standard:
GB/T 19001-2016 / ISO 9001:2015

This certificate is valid for the following scope:
Design& Development, Production, Operation and Maintenance Management of Marine Automation & Monitoring System, Marine Cyber Security System, Marine Information System, Marine Valves and Their Actuators. Design& Development and Production Management of Marine Sensor Transmitters, Flow Meters

ISO/IEC 27001:2022

Information security, cyber security and privacy protect information security management system requirements

DNV

MANAGEMENT SYSTEM CERTIFICATE

This is to certify that the management system of
Aquasync Innovation (Zhejiang) Co., Ltd.
Room1808, Ping'an Fortune Center, Binhu District, Wuxi, Jiangsu, China
and the sites as mentioned in the appendix accompanying this certificate

has been found to conform to the Information Security Management System standard:
ISO/IEC 27001:2022

This certificate is valid for the following scope:
Information Security Management System Covers Design& Development, Production, Operation and Maintenance Management of Marine Automation & Monitoring System, Marine Cyber Security System, Marine Information System. The Related Facilities, Infrastructure and Personnel for above Services. This is in Accordance with the Statement of Applicability, Version V1.0

ISO/IEC 20000-1:2018

Information Technology Service Management System

DNV

MANAGEMENT SYSTEM CERTIFICATE

This is to certify that the management system of
Aquasync Innovation (Zhejiang) Co., Ltd.
Room1808, Ping'an Fortune Center, Binhu District, Wuxi, Jiangsu, China
and the sites as mentioned in the appendix accompanying this certificate

has been found to conform to the IT Service Management System standard:
ISO/IEC 20000-1:2018

This certificate is valid for the following scope:
The IT Service Management System of Aquasync Innovation (Zhejiang) Co., Ltd. Supporting the Provide of Maintenance Services in Marine Automation & Monitoring System, Marine Cyber Security System, Marine Information System to External Contracted Customers from Corp Office Site in Accordance with the Service Catalog

PART TWO

2

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

Ship LAN System

CCTV System

Maritime LEO Satellite Communication System

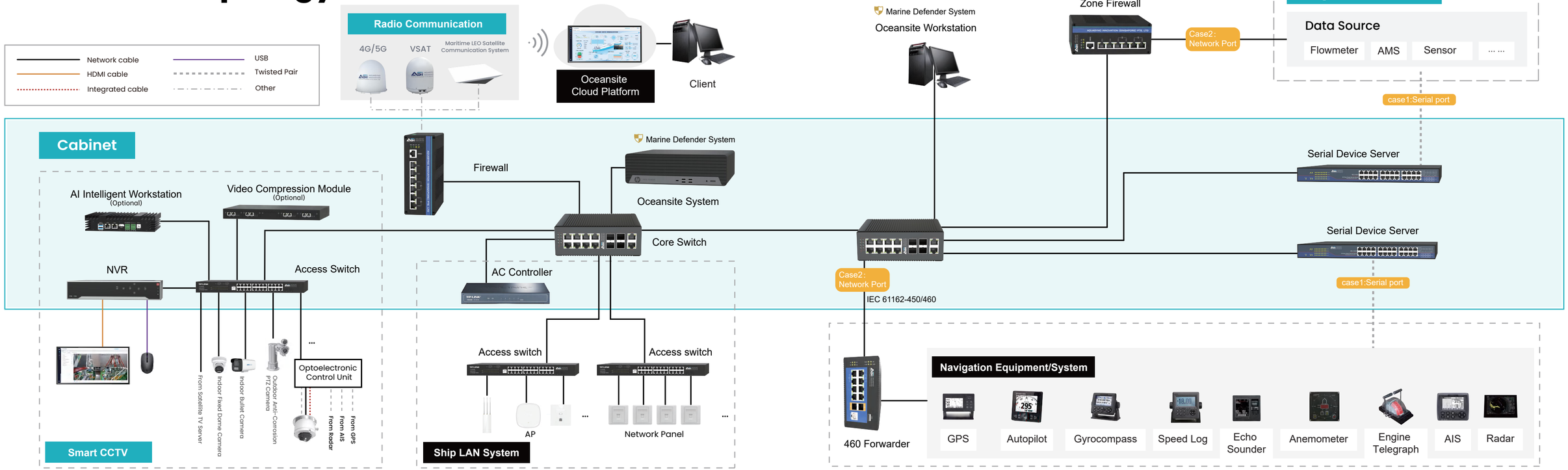
VSAT Satellite Communication System

5G Cellular Mobile Network

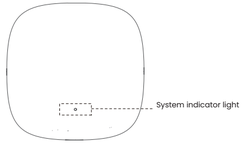
Network Information Cabinet

We Provide

2.1 Network Topology

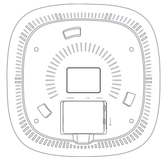


2.2 Ship LAN System-Indoor Ceiling-Mounted AP



Front view diagram

Schematic diagram of the AP heat dissipation hole surface



Schematic diagram of the bottom port and buttons

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

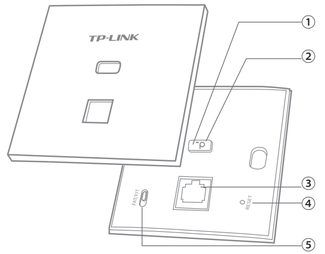
Name	Status		Description
System LED	Power-on Boot		Solid green during boot, then fast blinks twice when ready
	AP	Solid on	System operating normally
		Flickering	In FIT mode: blinks every 2s when not connected to AC
		Off	System error or power failure

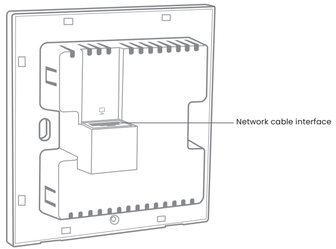
2.2 Ship LAN System-Wireless Access Point AP

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.

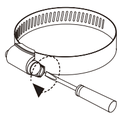
Installation Method	Direct installation to international 86-type network junction box
Dimensions	86×86×33mm (L×W×H)
Wireless Speed	• 2.4GHz：300Mbps • 5GHz: 1201Mbps
Ports	Front: 1× 10/100/1000Mbps RJ45 port Rear: 1× 10/100/1000Mbps RJ45 port
Antenna	Internal antenna
Indicators	1× System status LED
Buttons	1× RESET button 1× EasyMesh button 1× FAI/FIT mode toggle switch
Power Supply	Standard PoE powered
Power Consumption	• Max: 9.5W (PoE) • Idle: 3.45W (PoE)
Operating Environment	Temperature: 0℃ to 40℃ (operating) Humidity: 10% to 90% RH non-condensing Storage temperature: -40℃ to 70℃ Storage humidity: 5% to 90% RH non-condensing

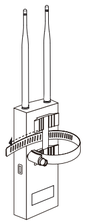
Key press	Function description
EasyMesh Button	When the system is working normally, press the EasyMesh button to enter EasyMesh pairing mode.
LED Indicator Description	System Initialization：Solid on during startup, blinks 4 times after startup completes. After Initialization Solid on: System is operating 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

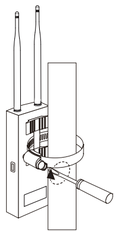
Installation Method 2: Pole Mounting

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.

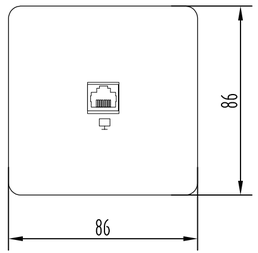
Model	TLAPI901G Diaphragm Version
Installation Method	Pole/Wall Mounting
Dimensions	209×95×43mm
Wireless Speed	2.4GHz Band: 600Mbps 5GHz Band: 1300Mbps
Ports	1 × 10/100/1000Mbps RJ45 Port 1 × 1000Mbps SFP Port (Industrial-grade optical module recommended, operating temp ≥85°C) 1 × DC Power Port
Antenna	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)

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

Unit of external dimensions (mm)

Physical Pictures

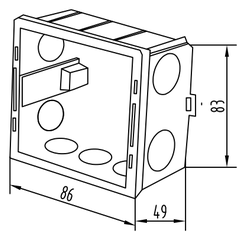
Front view diagram



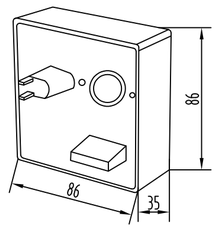
Performance Description

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
	Specifications: 1-port/2-port/4-port options available
Parameters and Characteristics:	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℃

Product Introduction

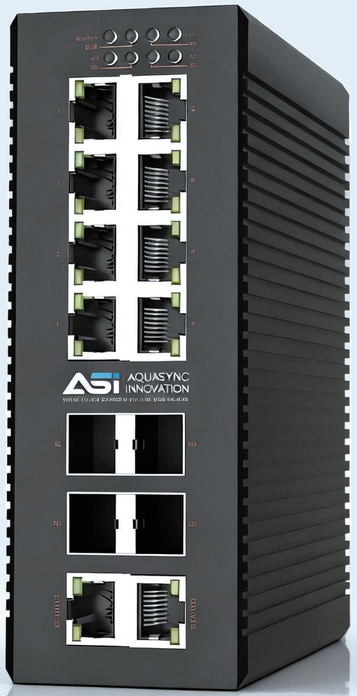


Recessed Junction Box



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

Modular Expansion
Modular flexibility with 4-port expansion options

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

Tool-Less Design
Tool-less modular design for hot-swappable upgrades

Compact Design
Ultra-compact form factor with multiple mounting options

Passive Backplane
Passive backplane minimizes maintenance requirements

Rugged Housing
Rugged die-cast housing for harsh environments

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

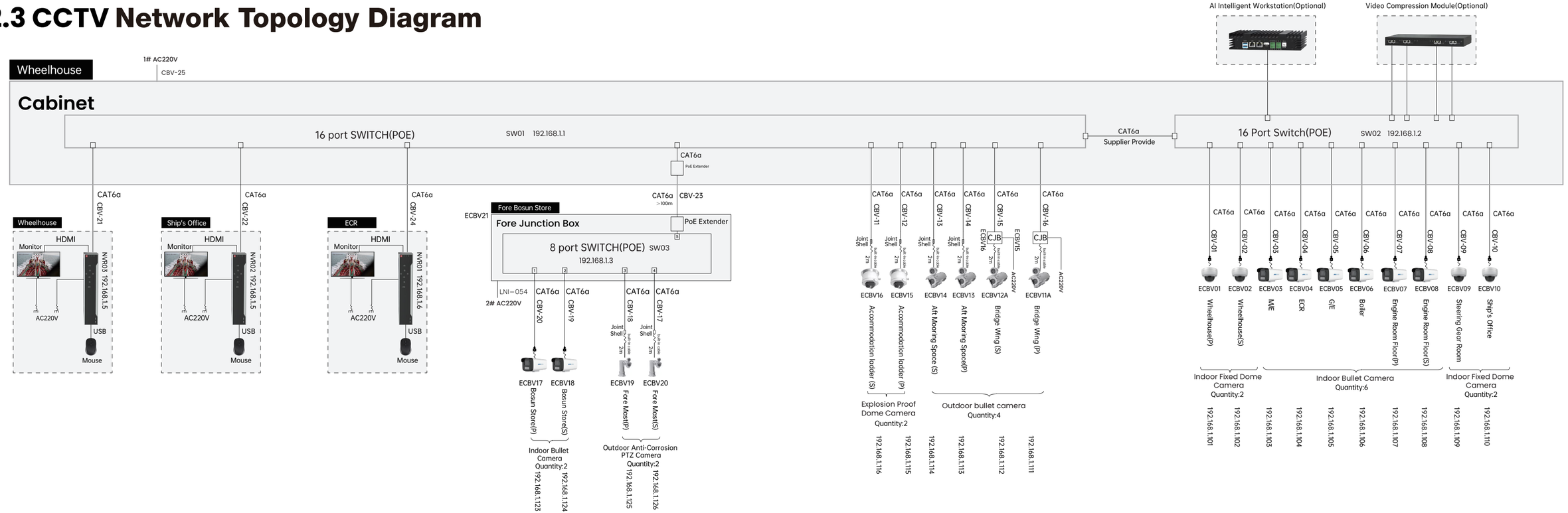
Load Balance

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

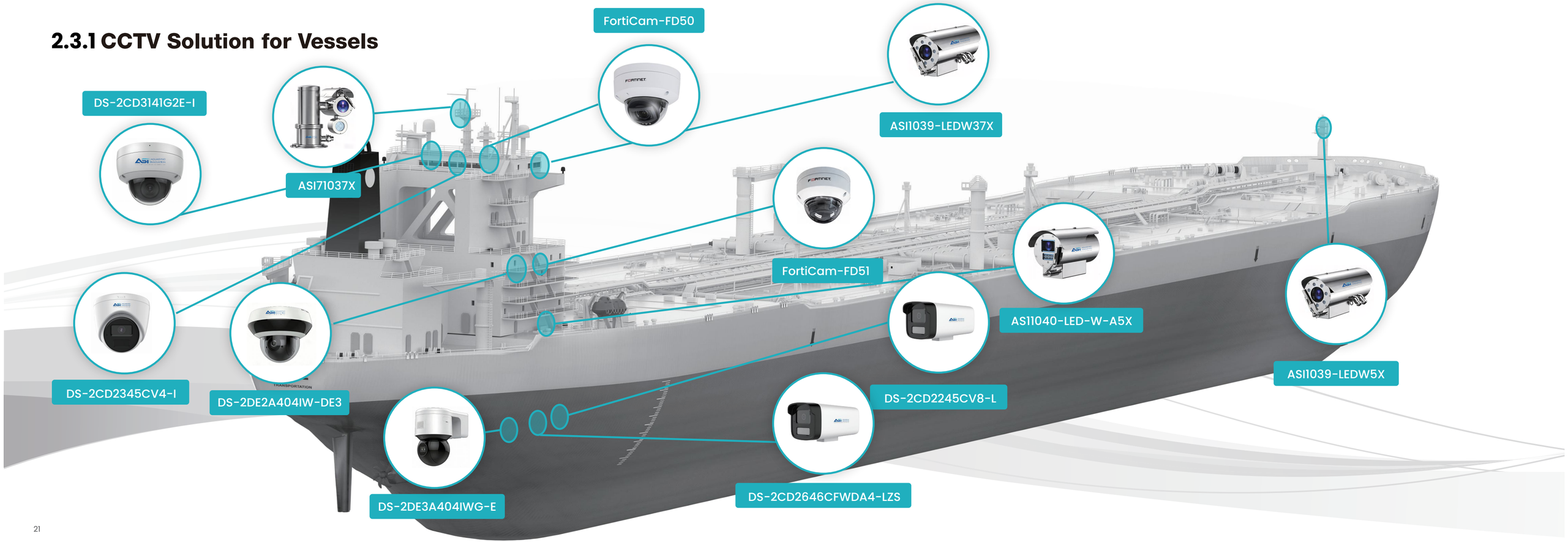
Requirement / Standard	China MSA Technical Guide 1.0
Effective Date	Mar. 2025
Applicability	Domestic Oil /Chemical Tankers, Gas Carriers and Passenger Ships
Minimum Resolution ≥1080p / ≥2MP	✓
Min. Frame Rate ≥30FPS / ≥15FPS	✓
Ingress Protection (IP66 In-door & IP68 Outdoor)	
Marine-grade Certification	
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.

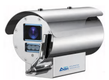
Requirement / Standard	India DGS MSN 02/2025
Effective Date	Existing: 12 Feb 2028 Newly Registered Ships: 3 year from registration date
Applicability	Indian flagged and SPL Vessels
Minimum Resolution ≥1080p / ≥2MP	✓
Min. Frame Rate ≥30FPS / ≥15FPS	✓
Ingress Protection (IP66 In-door & IP68 Outdoor)	✓
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

	ASI (Outdoor)				ASI (Indoor)						Fortinet(Indoor)	
Name	**Marine PTZ IR Camera**	**Marine Bullet IR IP Camera**	**Marine Bullet IR IIP Camera**	**Marine Bullet IR IP camera**	**Indoor PTZ Dome Camera**	**Indoor Bullet Camera**	**Indoor Bullet Camera**	**Indoor Fixed Dome Camera**	**Indoor Fixed Dome Camera**	**Indoor Fixed Dome Camera**	**Indoor Fixed Dome Camera**	**Indoor Fixed Dome Camera**
Model	ASI71037X	ASI1039-LEDW37X	ASI1039-LEDW5X	AS11040-LED-W-A5X	DS-2DE3A404IWG-E	DS-2CD2646C FWDA4-LZS	DS-2CD2245CV8-L	DS-2CD2345CV4-I	DS-2DE2A404IW-DE3	DS-2CD3141G2E-I	FortiCam-FD50	FortiCam-FD51
Product Image												
Pixel	8MP				4MP						5MP	
Protection Grade	IP68				IP66					IP67	IP66	
Focal Length	Zoom available, 37x		Zoom available, 5x		Zoom available, 4x	Zoom available, 4x	Fixed focus		Zoom available, 4x	Fixed focus	Zoom available, 4x	Fixed focus
Power	85W	25W			14W	15W	6.5W		9.2W	6.5W	12.95W	6.38W
Material	SUS316L				Aluminum Alloy	Engineering Plastic				Metal&Engineering Plastic	Metal&Engineering Plastic	
Chinese Interface	√				/	√			/		√	
English Interface	√				√	/			√		√	
AC100V-240V Power Supply	√	/			/						/	
POE Power supply	/	√			√						√	
Heating	√				/						/	
Infrared	150m	100m		30m	50m		30m		20m	40m	30m	
Wiper	√				/						/	
Suggested Installation Location	Compass Deck, Foremast	Bridge Wings	Fore and aft mooring areas, accommodation ladder passage, lifeboat area	Port and starboard entrances to the accommodation	Wheelhouse, ECR, indoor areas and corridors, engine room	Engine Room		Wheelhouse, ECR, indoor areas and corridors, engine room			Wheelhouse, ECR, indoor areas and corridors, engine room	

2.4 Maritime LEO Satellite Communication System

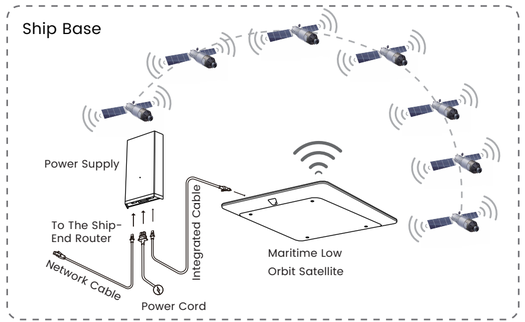
System Introduction

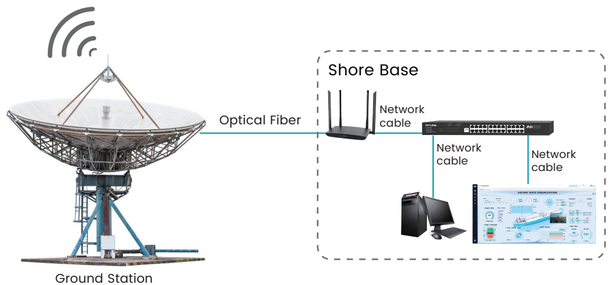
The maritime LEO satellite system can provide high bandwidth, low latency broadband and communication services for global consumers and commercial users.

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.





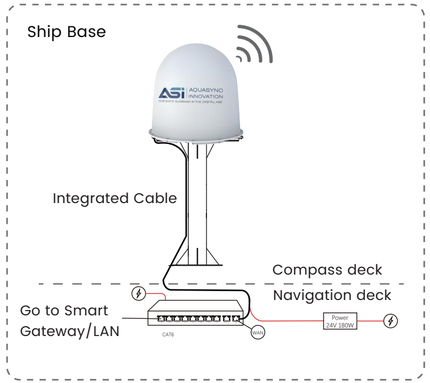
2.5 VSAT Satellite Communication System

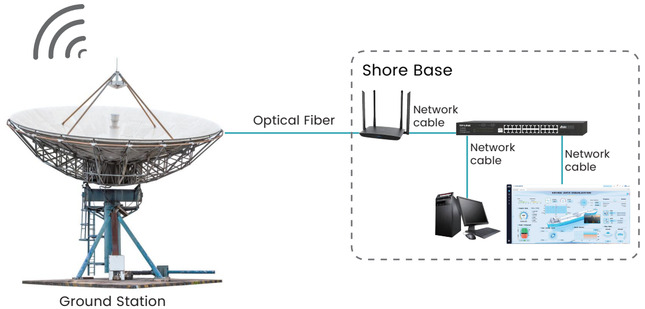
System Introduction

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





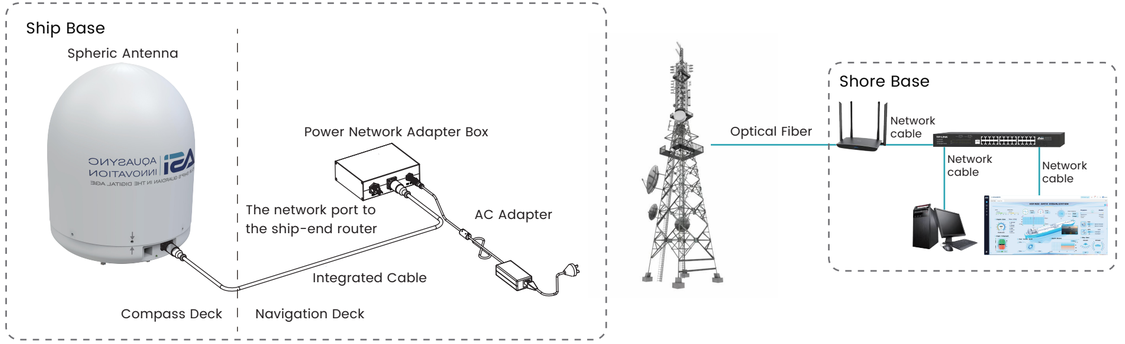
2.6 5G Cellular Mobile Network

System Introduction

5G cellular mobile network antenna receives and amplifies the shore operator's base station signal to connect the Internet signal to the ship side router so that the equipment and staff can connect to each other. Compared with satellite communication costs, the cost of 5G cellular mobile networks is lower, saving communication costs.

Technical Parameters

Frequency Range of Antenna	650-6000MHz
Signal Coverage Range	Within 25 Nautical Miles
Wind Resistance Strength	60m/s
Environment Rating	IP67
Average Speed of Up And Down	4G uplink at 28.51Mbps and downlink at 48.57Mbps;
	5G uplink at 80.40Mbps and downlink at 348.31Mbps;



2.7 Network Information Cabinet

Information-Based Standard Supply

Oceansite Standard Supply

Information and Oceansite Standard 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 Oceansite Platform Server
09 UPS
10 CCTV Switch
11 LAN Switch
12 Serial Device Server
13 Switch Power Supply Uni
14 Micro Circuit Breaker
15 Firewall
16 Waterproof PoE Extender
17 Core Switch

PART THREE

3

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

Platform Solution

System Integration
Centralized management of all ship systems

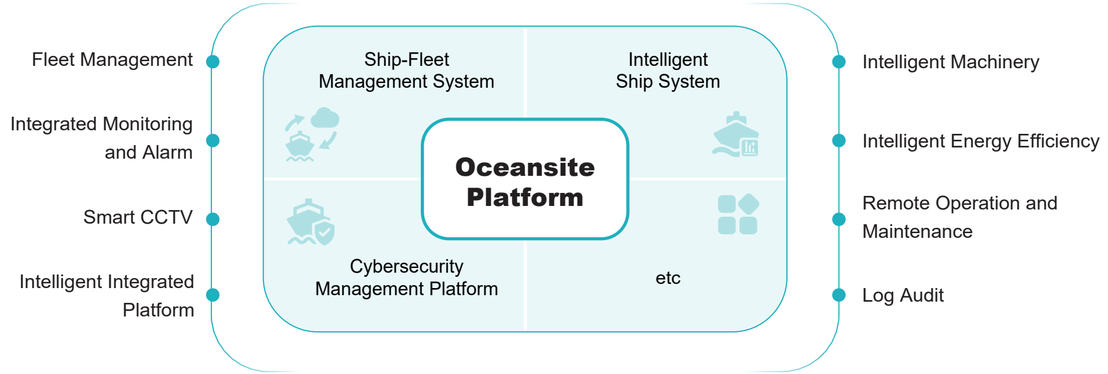
Data Management
Ship-wide data collection and analysis

Safety and Compliance
Meets UR E27 cybersecurity level SL0 requirements

Flexible Configuration
Platform + App model, purchase as needed

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

Configuration Application

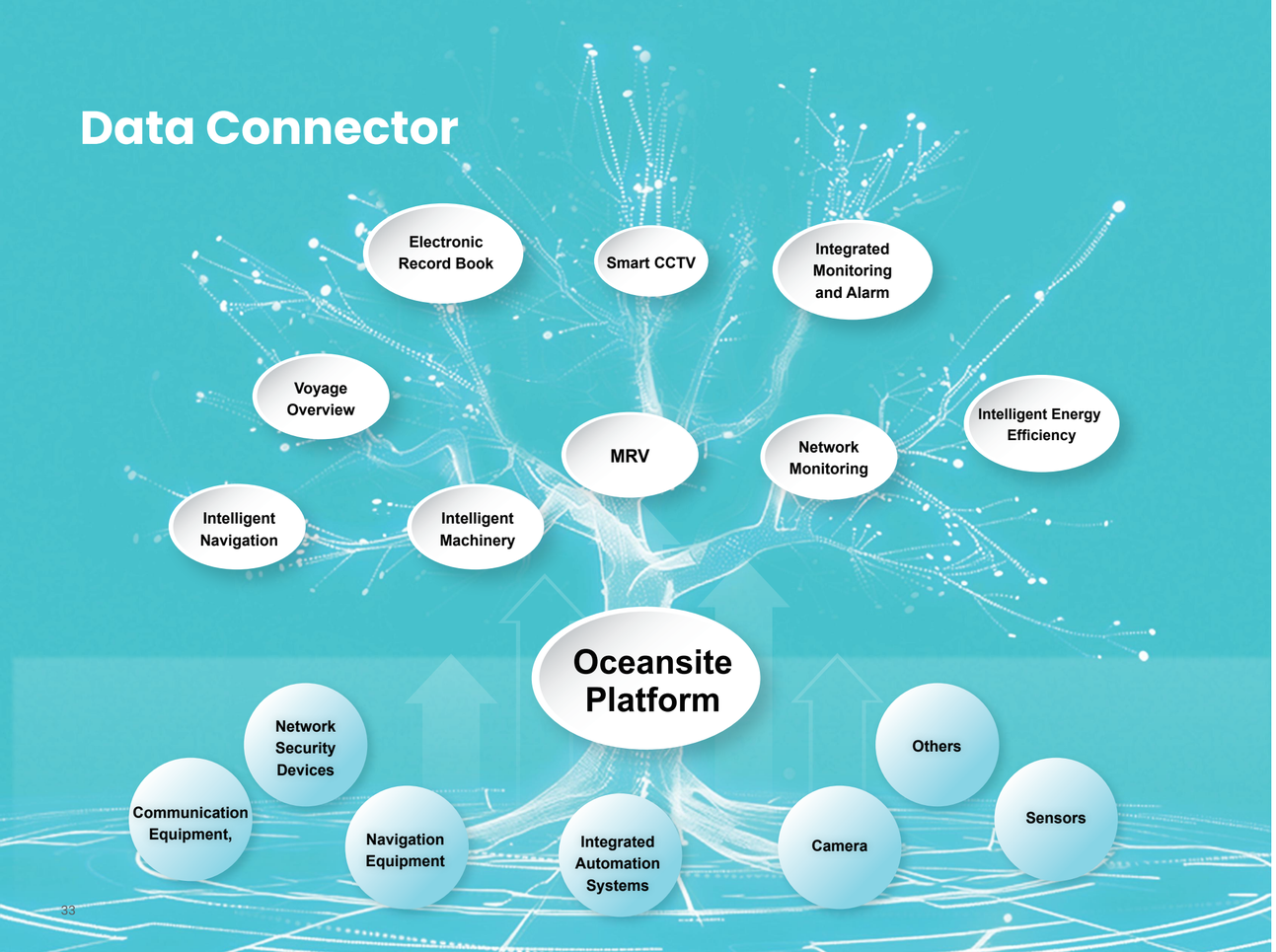


Challenges in Ship Digitalization

01	02	03	04	05
Data Fragmentation	**Data Security Risks**	**Low Data Utilization**	**Difficult Business Decision-Making**	**Slow Response to Business Requirements**
Each system operates independently, making data sharing difficult.	Lack of a unified security protection mechanism.	Unable to extract value from historical ship data.	Lack of intelligent guidance, relying on manual judgment.	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

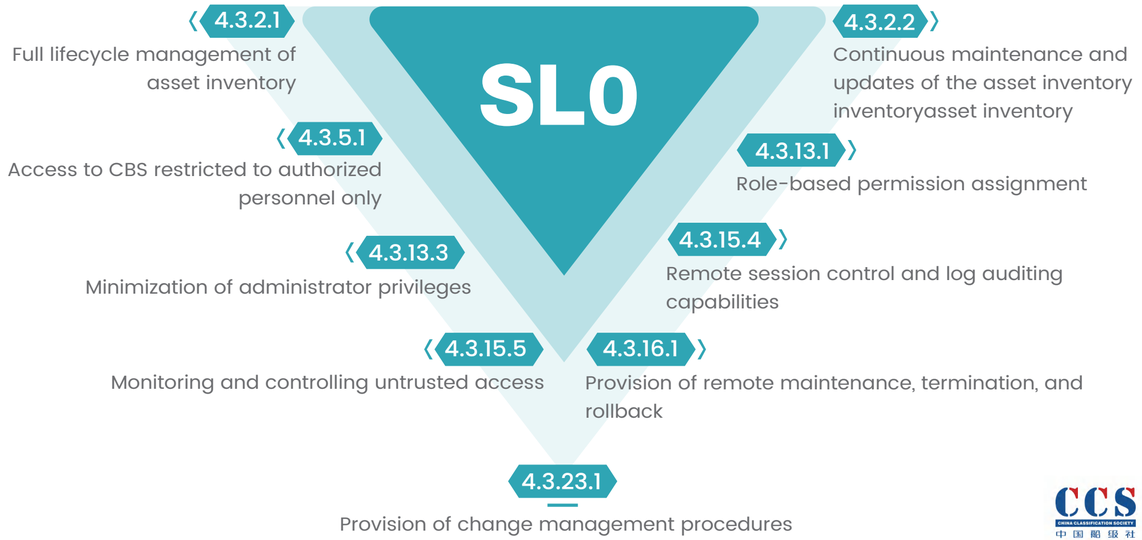
3.2 Intelligent Ship System

3.3 Ship-Shore Fleet Management System

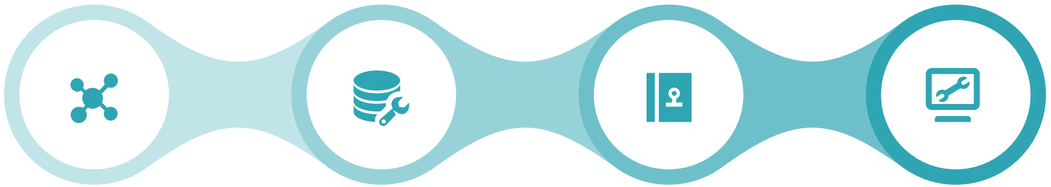
3

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.

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.

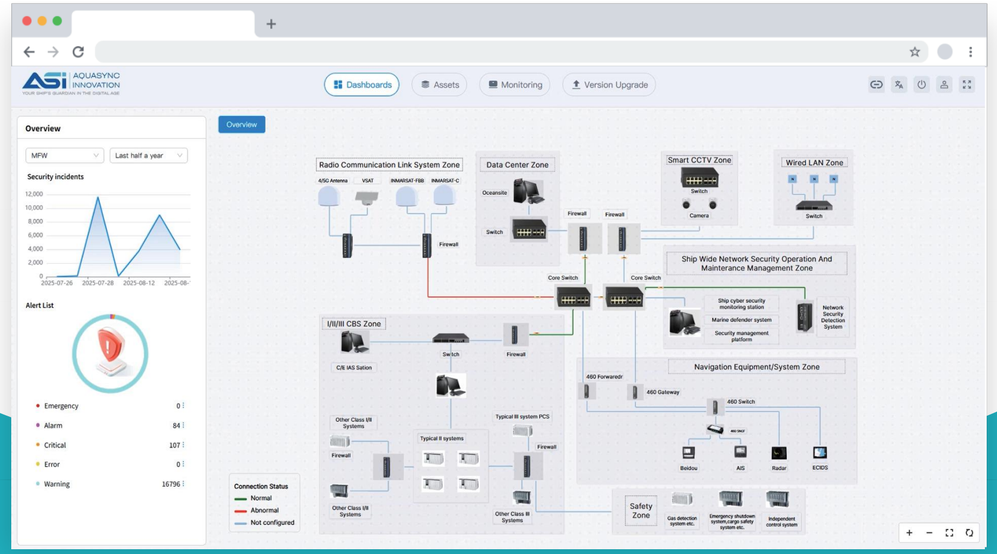
Security Incidents:

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

3.1.3 Typical Applications

Topology Visualization

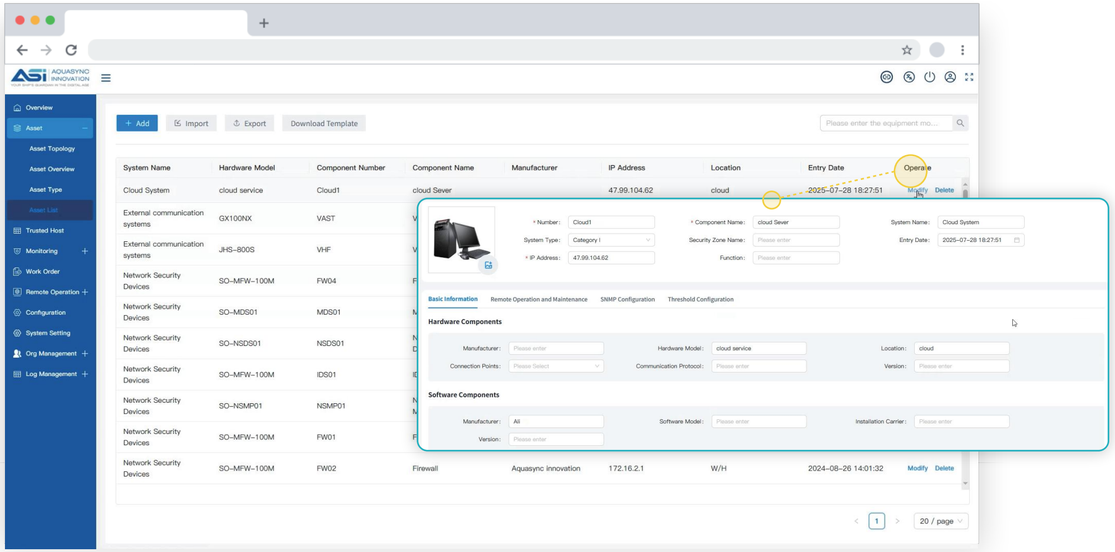
The shore side can visually view the ship's network structure and understand the distribution relationship of firewalls, switches, servers and other equipment.



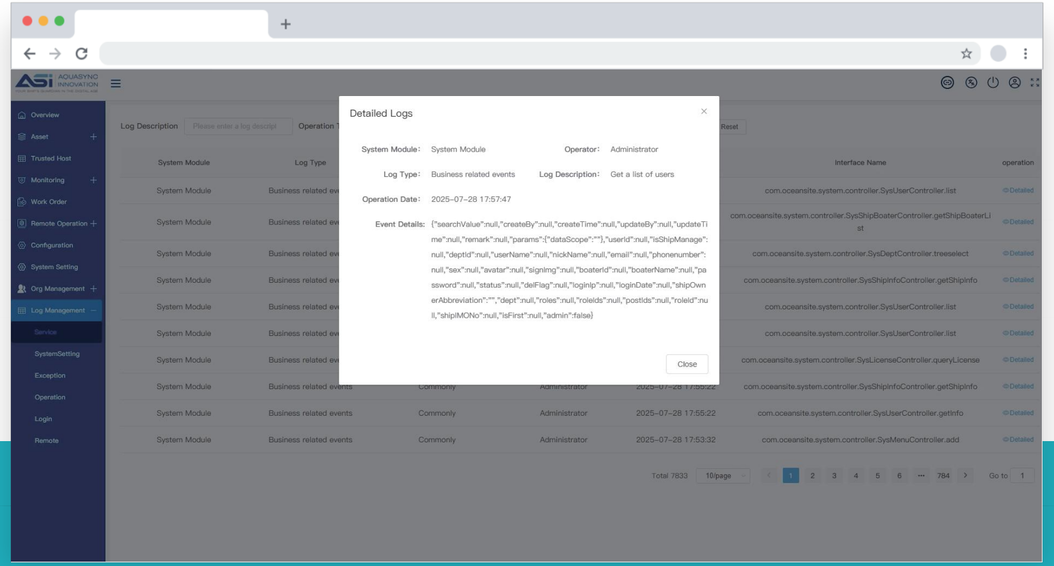
Network topology management

Asset Information Management

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

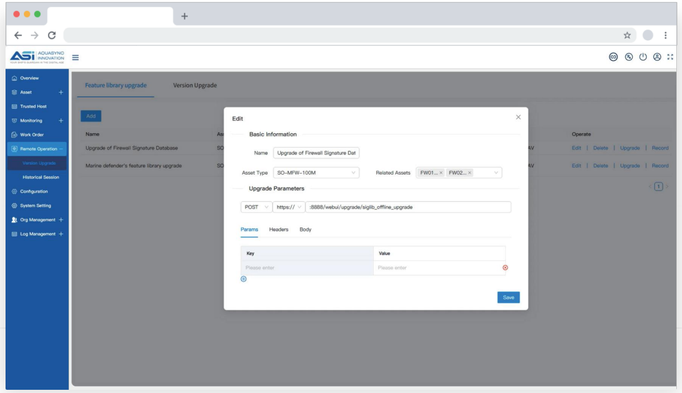


Remote Operation and Maintenance



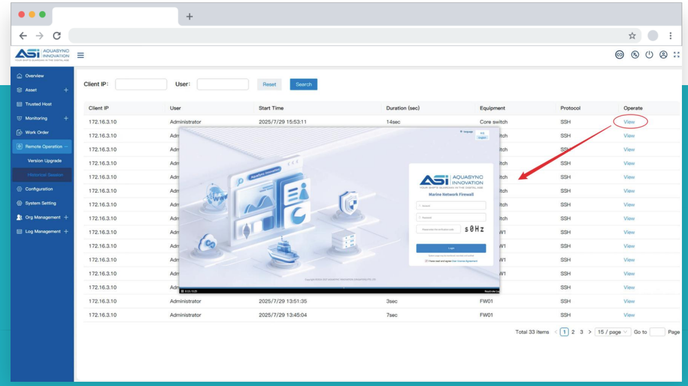
Log Auditing

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

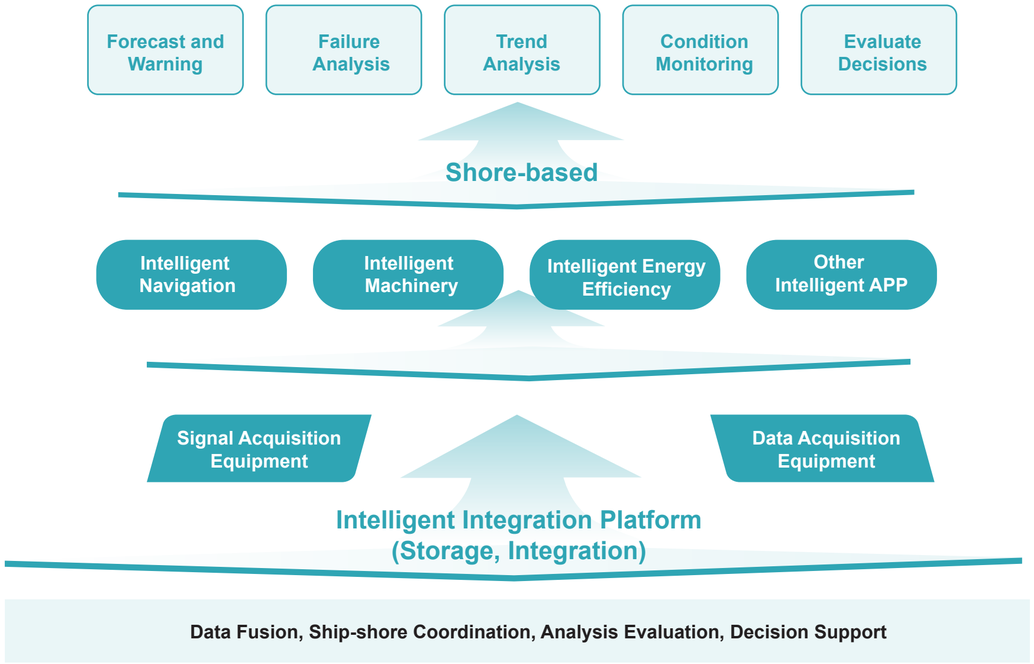
3

PART THREE

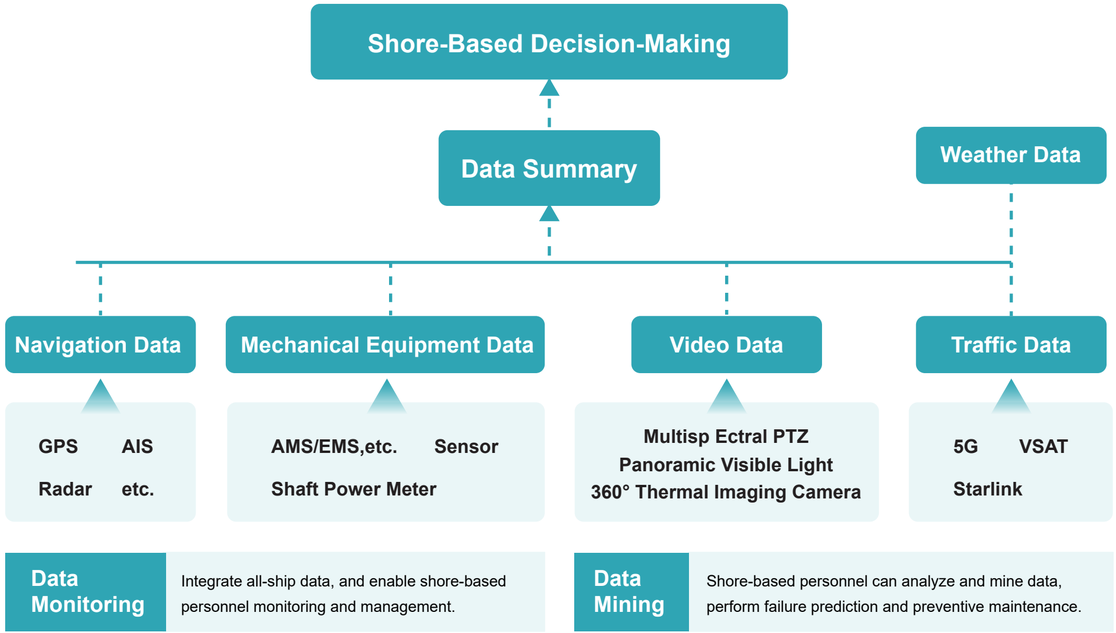
IACS UR E22

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

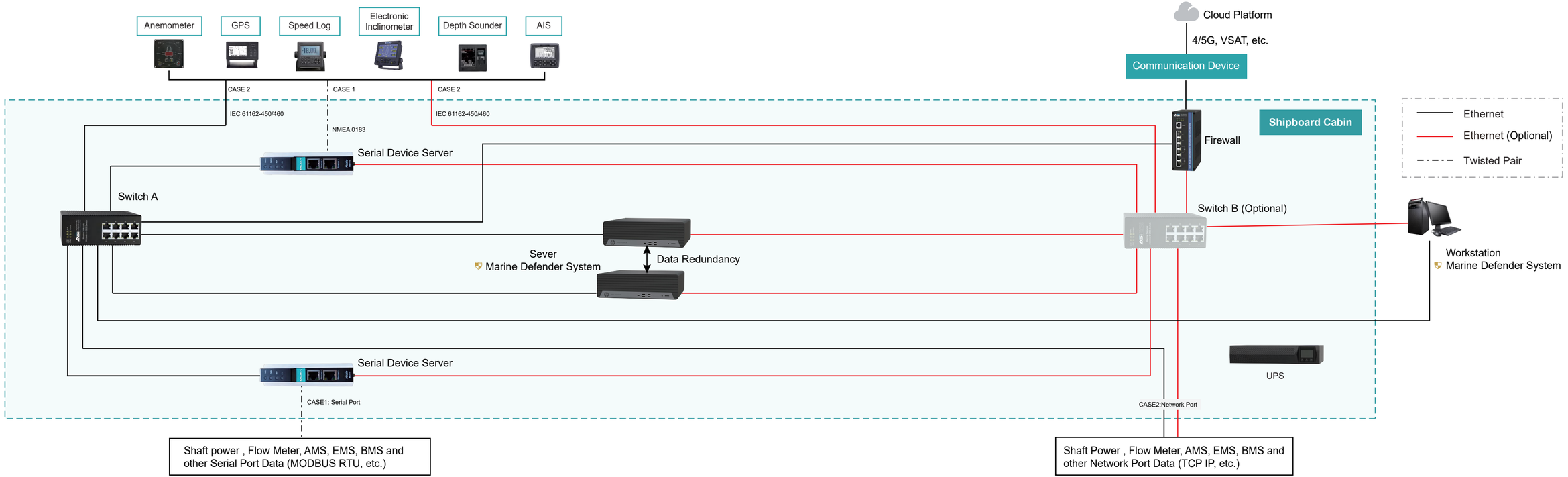
3.2.1 System Structure



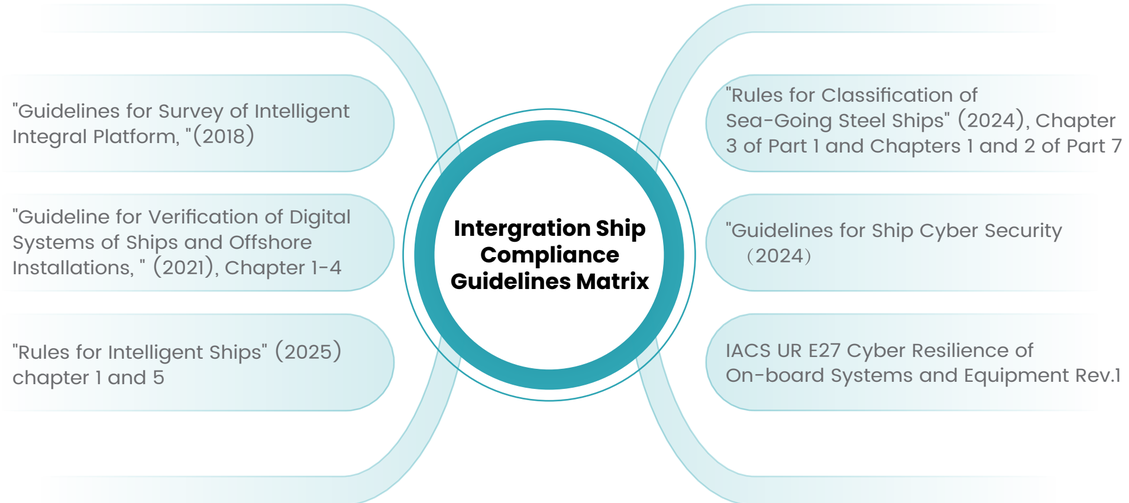
3.2.2 Data Fusion



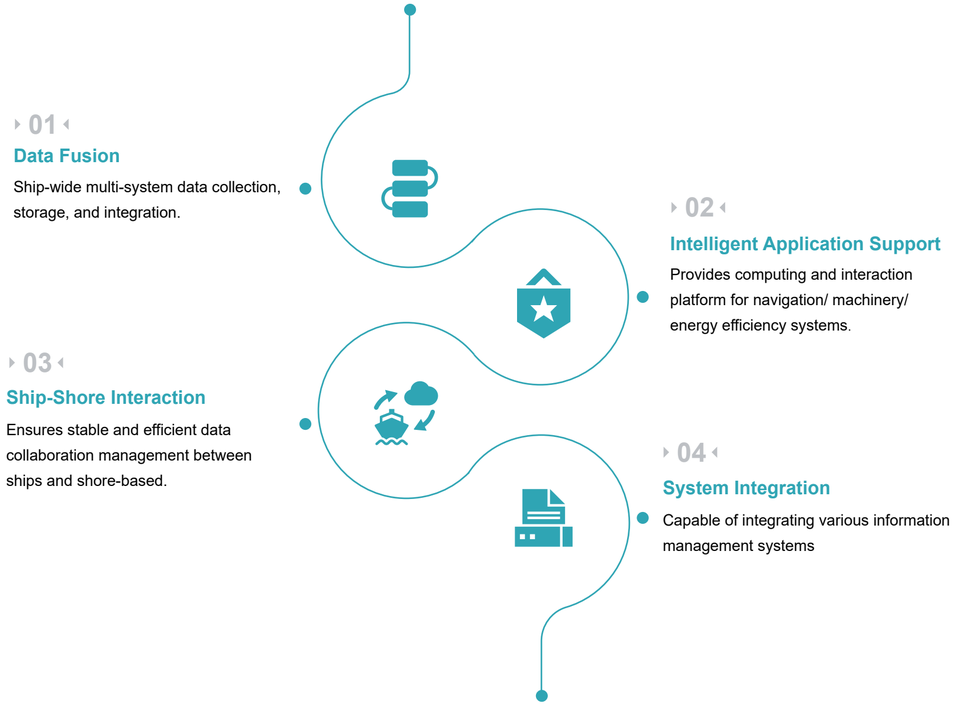
3.2.3 I/E/M Network Topology



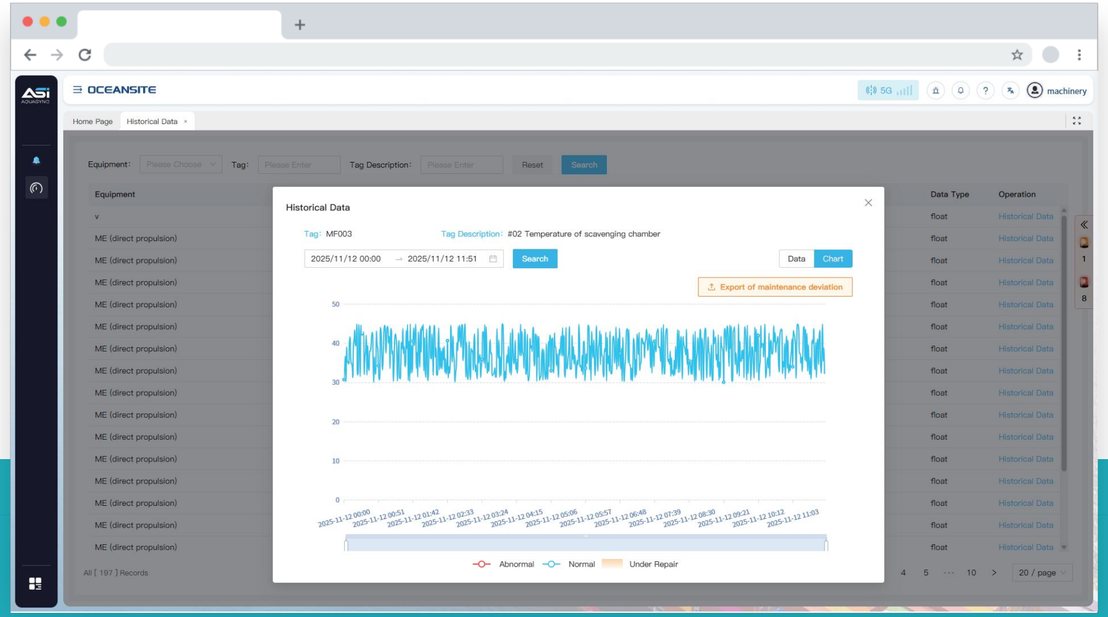
3.2.4 Intelligent Integration Platform



System Description



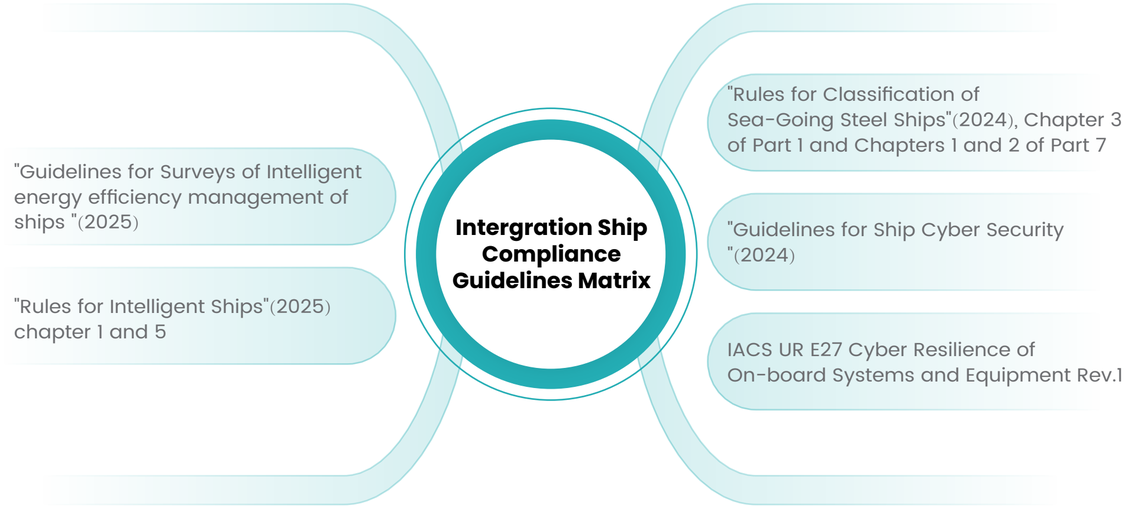
Interface Presentation



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-consumingequipment and navigation status data.

02

Energy Consumption Monitoring & Evaluation

Real-time display of energy consumption distributionacross equipment and the ship's overall energyefficiency status.

03

Standardized Energy Efficiency Reports

Automated generation of IMO/EU/UK-compliant energyefficiency evaluation reports.

04

Threshold Exceedance Alarm

Notifications for exceeding limits in energy efficiencyconsumption,or CII (Carbon Intensity Indicator)metrics.

05

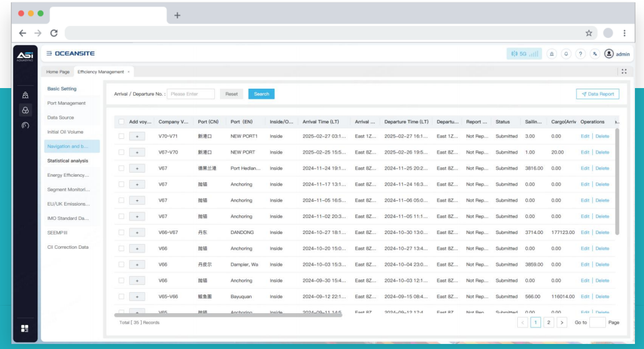
Fuel Information Management

Management of bunkering, fuel inventory, and fuelswitching operations.

Interface Presentation

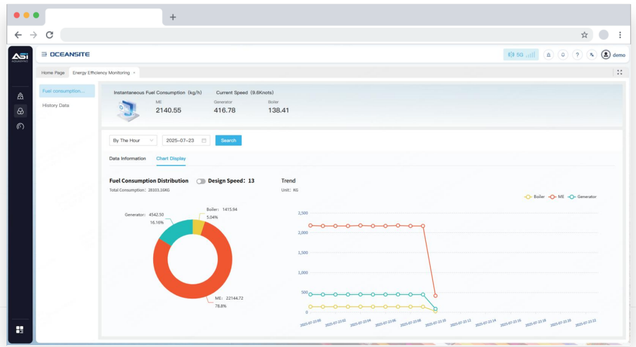
Energy Efficiency Overview

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



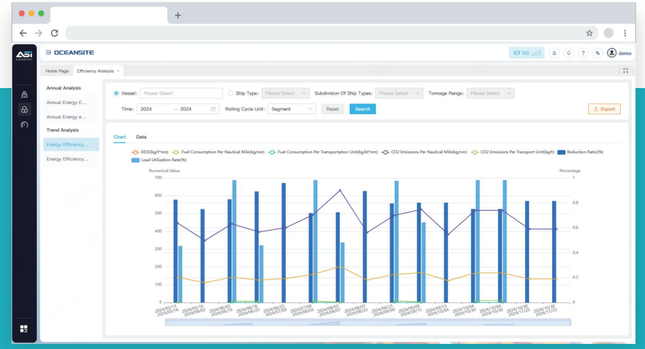
Navigation & Berthing Information

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



Efficiency Monitoring -Fuel Consumption Management

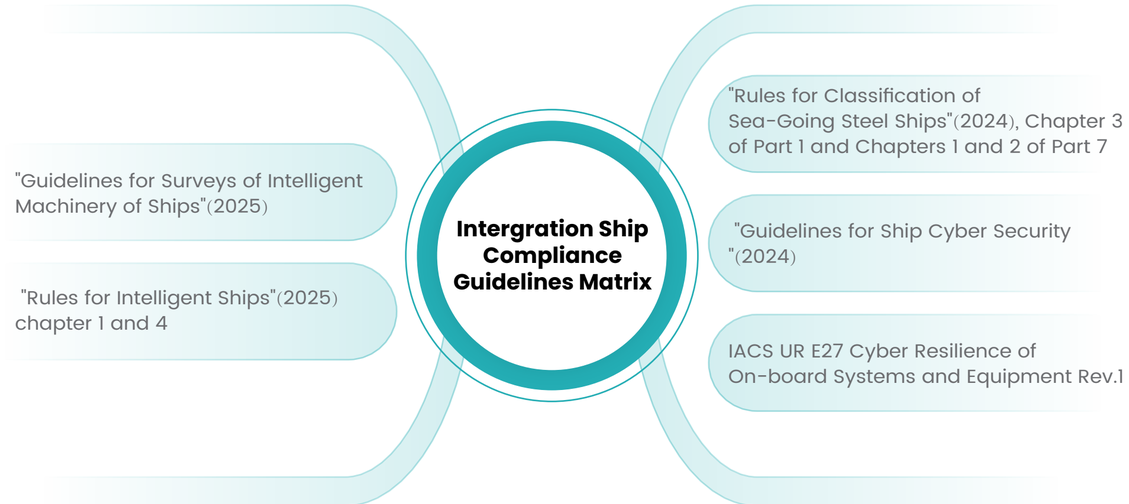
Fuel consumption data and percentage of each fuel-consuming device.



Efficiency Analysis -Trend Analysis

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

3.2.6 Intelligent Machinery



System Description

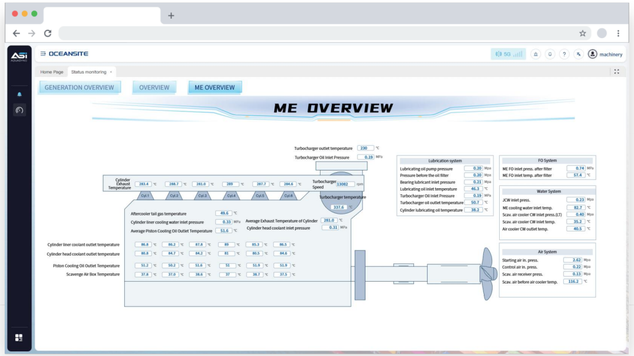
01
Equipment Status Monitoring
Monitors the operational status of majorpropulsion-related equipment and systems inthe cabin.

02
Knowledge Base
Continuously accumulates expert experience toprovide decision-making recommendations.

03
Health Analysis
Intelligently analyzes and evaluates the healthstatus of equipment and systems.

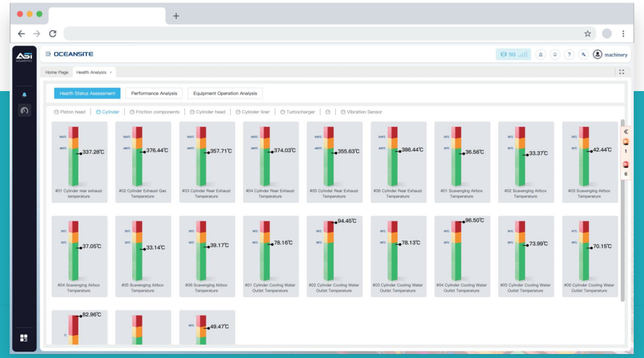
04
Decision Support
Assists crew in quickly identifying and resolvingissues.

Interface Presentation



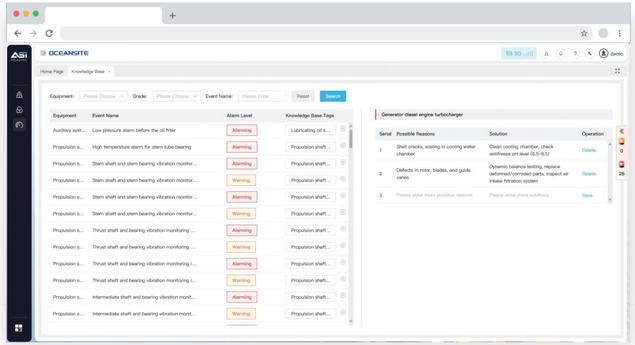
Status Monitoring

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



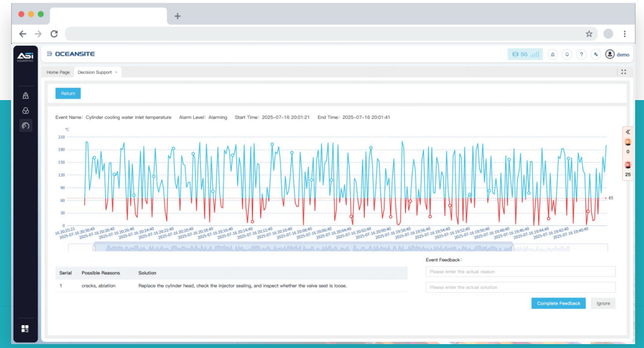
Health Analysis

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



Knowledge Base

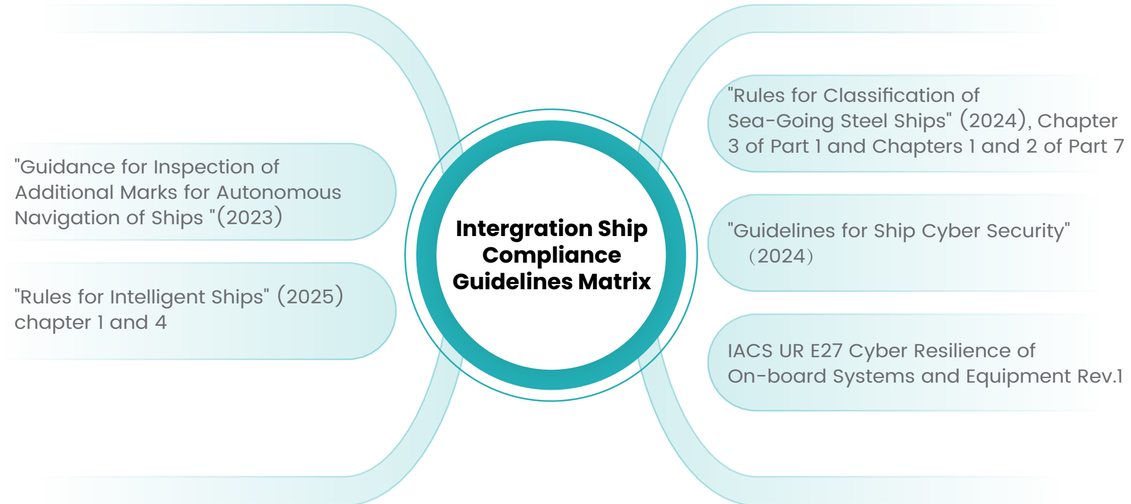
Integrates crew and expert opinions to provide corresponding handling suggestions for different types of abnormal alarms and supports continuous iterative improvement.



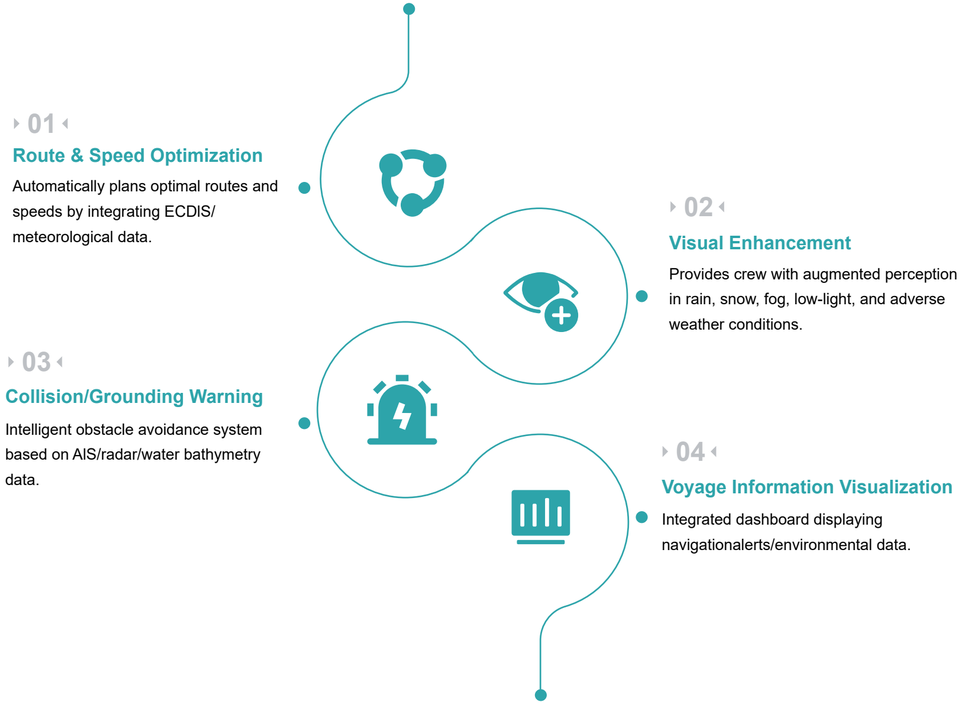
Decision Support

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.

02

Visual Enhancement

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

03

Collision/Grounding Warning

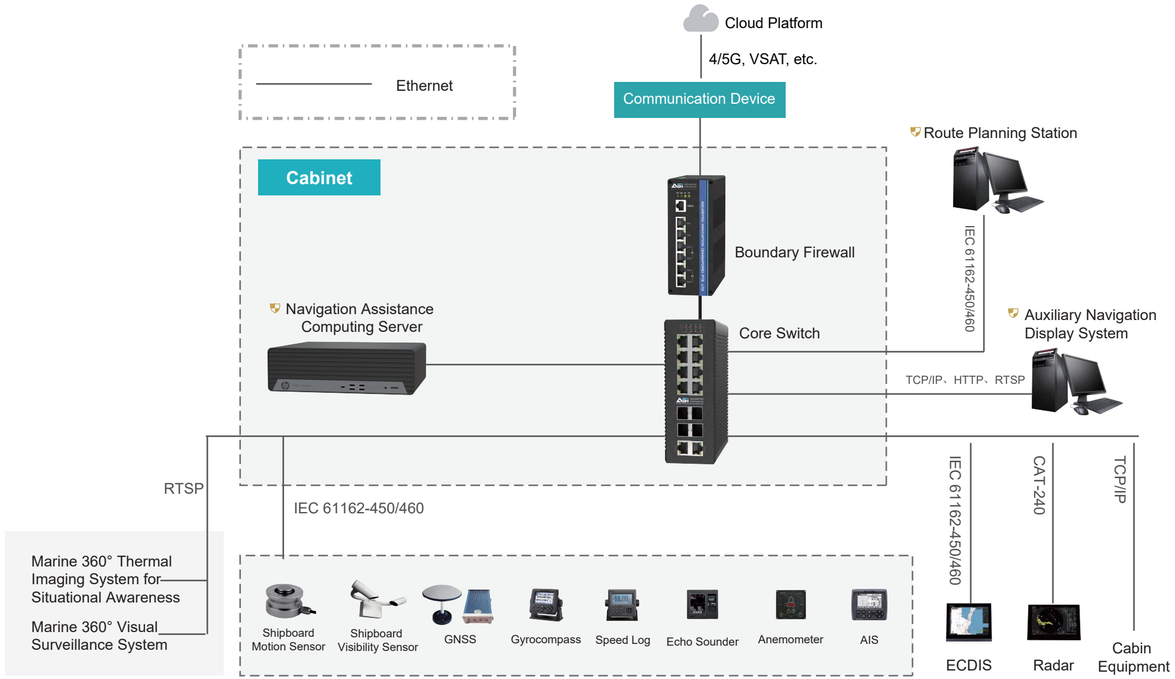
Intelligent obstacle avoidance system based on AIS/radar/water bathymetry data.

04

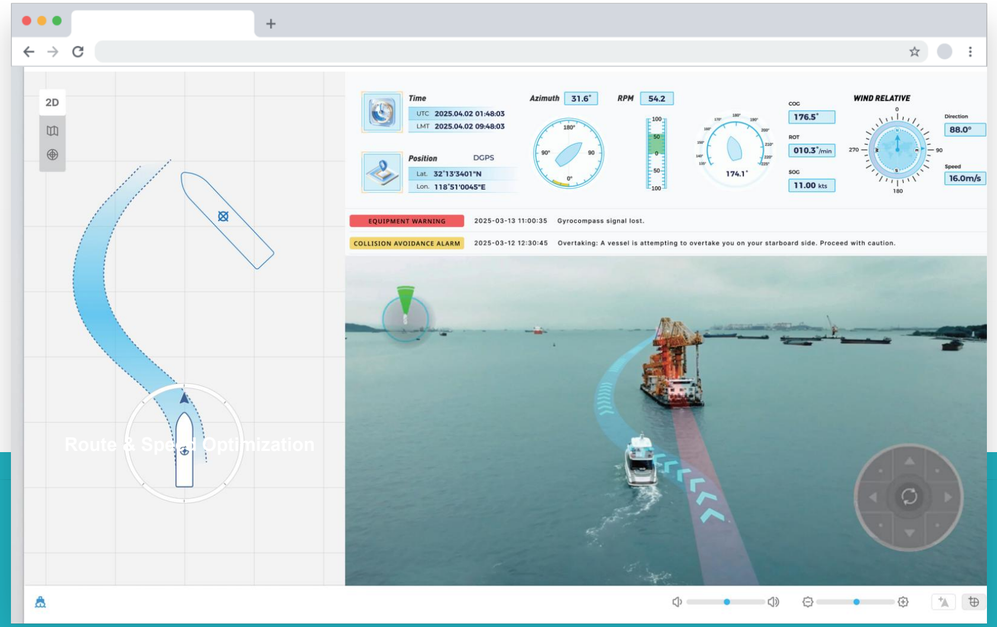
Voyage Information Visualization

Integrated dashboard displaying navigationalerts/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

3

PART THREE

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

中 国 船 级 社
CHINA CLASSIFICATION SOCIETY

Form CSB-2
No. BJ24PM0001

船舶机械计划保养体系管理系统（软件）型式认可证书
CERTIFICATE OF TYPE APPROVAL FOR THE MANAGEMENT SYSTEM (SOFTWARE) OF PMS (Planned Maintenance System)

管理系统名称 / 版本 Management System & version: 船岸一体化平台-船舶机械计划保养系统/版本 1.0 OceanSite-PMS V1.0

申请人 Applicant: 中控海洋装备（浙江）有限公司 AQUASYNC INNOVATION (ZHEJIANG) CO., LTD

兹证明上述管理系统业经本社按照有关规定进行了评估和测试，确认此系统：

1. 满足本社规范和《船舶机械计划保养体系检验指南》的要求；
2. 软件满足本社船舶机械计划保养体系管理软件要求。

THIS IS TO CERTIFY that the above mentioned Management System has been evaluated and tested by this Society and hereunder confirmed that the system:

1. is in compliance with the Rules and "Guide for survey of PMS(Planned Maintenance System)" of this society; and
2. in compliance with the Software Requirement for PMS of this society.

本社同意上述系统在具有本社船级且实施船舶机械计划保养体系的船舶上使用，但系统应进行实船符合性检验，且应继续符合本社有关要求。

This above Management System is approved for use on board CCS classed vessels which is implementing or to be implement PMS, subject to an on site survey for confirming compliance with the intending vessel and the system to be continued in compliance with the relevant requirements of this society.

本证书有效期至
This certificate will remain in force until January 25, 2029.

地点 Issued at: Beijing
时间 Issued on: January 26, 2024

(Chen Jiejun)
中国船级社
CHINA CLASSIFICATION SOCIETY

No 2232418

AquaSync Innovation MRV Energy Efficiency Management System

CCS 数据交换适配证明
中国船级社 Proof of data exchange adaptation

产品 Product:
中控海洋 MRV 能效管理系统
Supcon Ocean MRV Energy efficiency management system
程序版本号：V1.0
Program version number: V1.0

产品供应商 Product supplier:
中控海洋装备（浙江）有限公司
Supcon Ocean Technology(ZHEJIANG) CO.,LTD
地址：杭州市滨江区六和路 309 号中控科技园 F119
Addr.: F119, Supcon Science Park, No. 309, Liuhe Road, Binjiang District, Hangzhou City

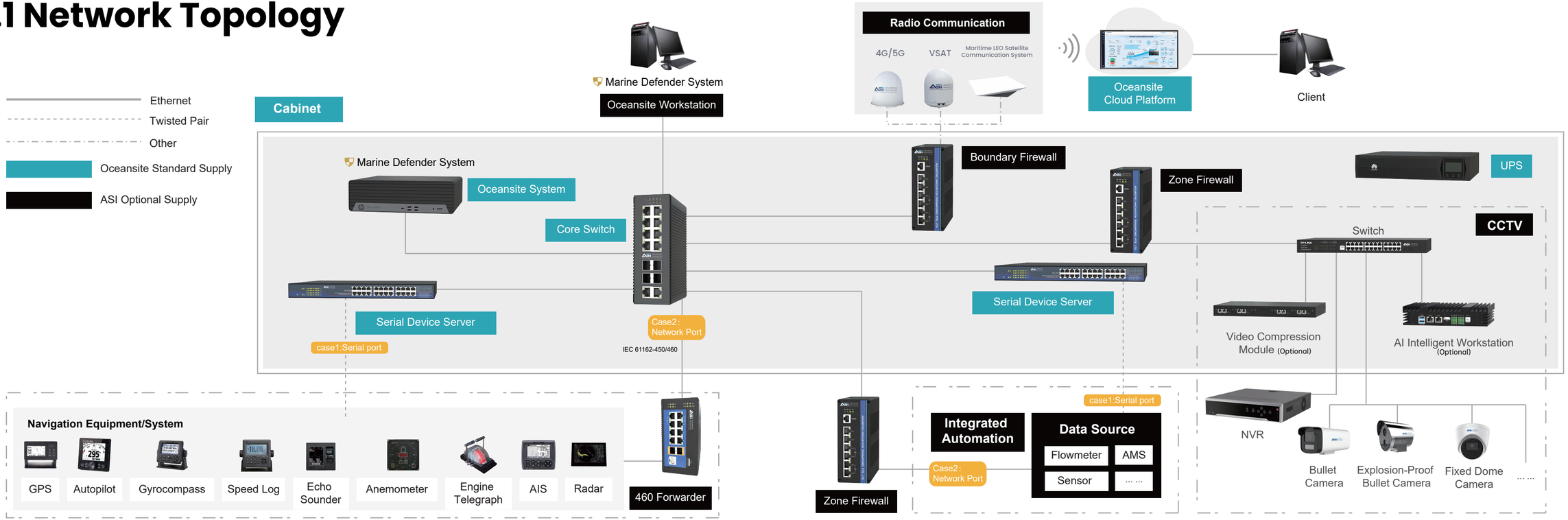
产品类型 Product type:
产品类型：信息化软件
Product type: Information software

产品服务能力 Product service capability:
中控海洋装备（浙江）有限公司开发的 MRV 能效管理系统通过适配，可以将船舶燃耗数据上报至 CCS 的船舶绿色生态综合管理系统，上报的数据具备了 CCS 开展船舶能效数据验证的条件。
The MRV energy efficiency management system developed by Supcon Ocean Technology(ZHE JIANG) CO.,LTD by adapting, can report ship energy consumption data to the CCS Green & Ecological Ship Management System, the reported data meets the conditions for CCS to conduct ship energy efficiency data verification.

依据标准及产品接入说明参见附页。
Regulations and Product access instructions, refer to the Appendix.

中国船级社信息开发咨询中心（盖章）
China Classification Society Information Development Consulting Center
签发日期：2023 年 7 月 27 日
Date of issue: July 27, 2023

3.3.1 Network Topology



3.3.2 Infrastructure

Oceansite Standard Supply

01

Oceansite Platform Server

02

UPS (Information and Oceansite Standard Supply)

03

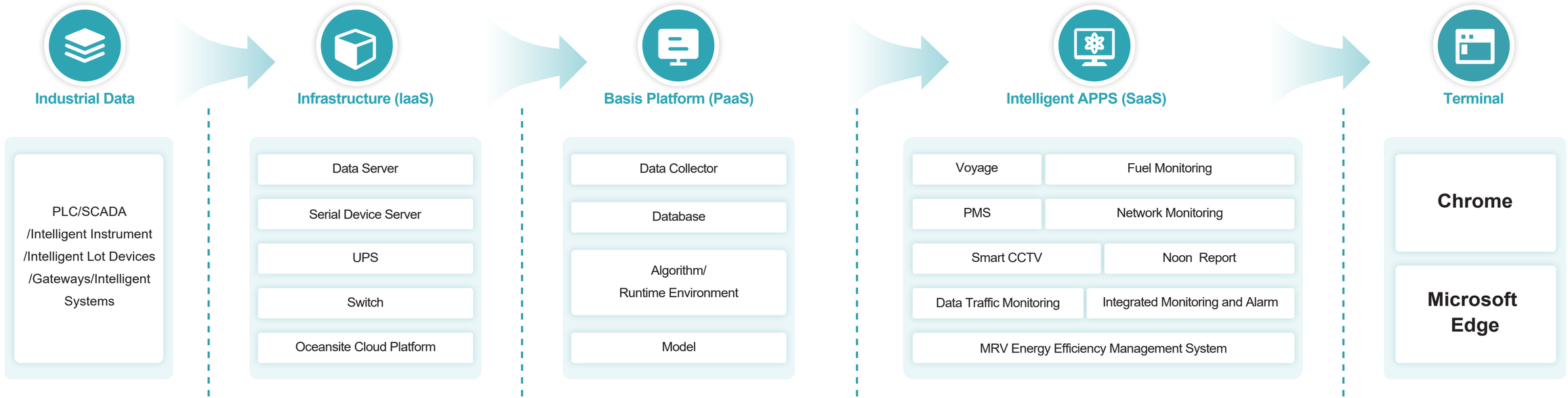
Serial Device Server

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

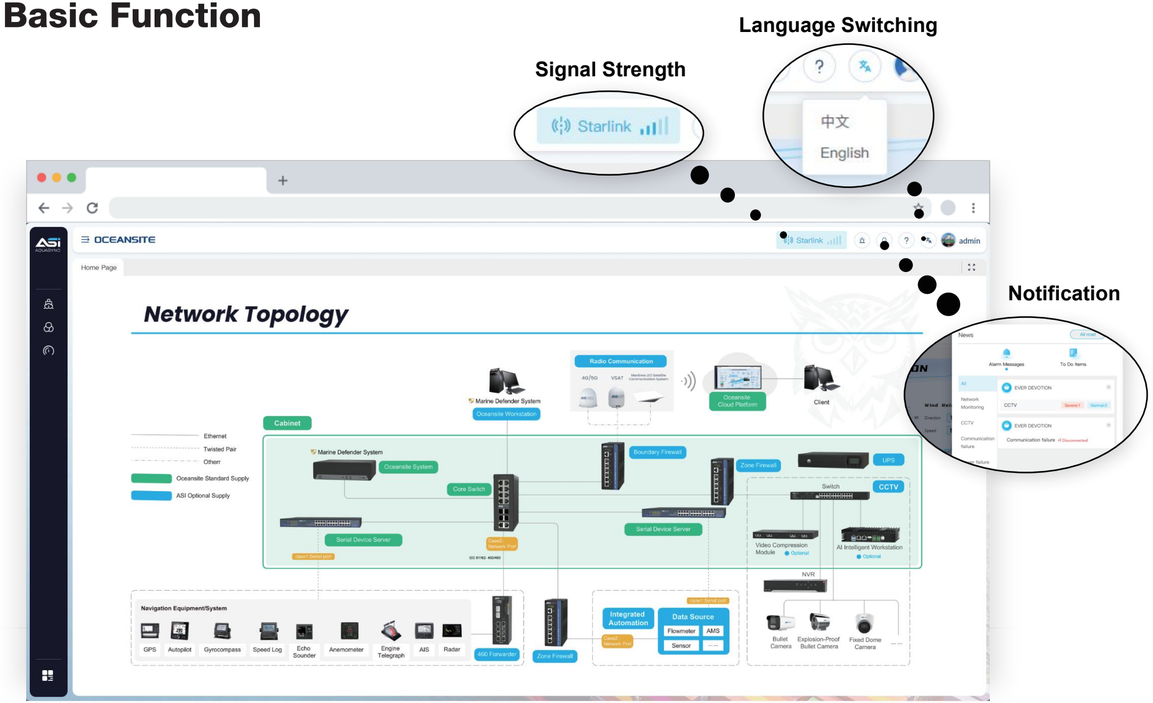
Voyage	Navigational Attitude	Electronic Chart	ECA Warning
Data Traffic Monitoring	5G/VSAT/Starlink Traffic Details	Online Recharge	
CCTV	Real-Time Preview	Historical Playback	
Integrated Monitoring and Alarm	AMS	Cargo Control System	Level Gauging System
	Valve Remote Control		

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

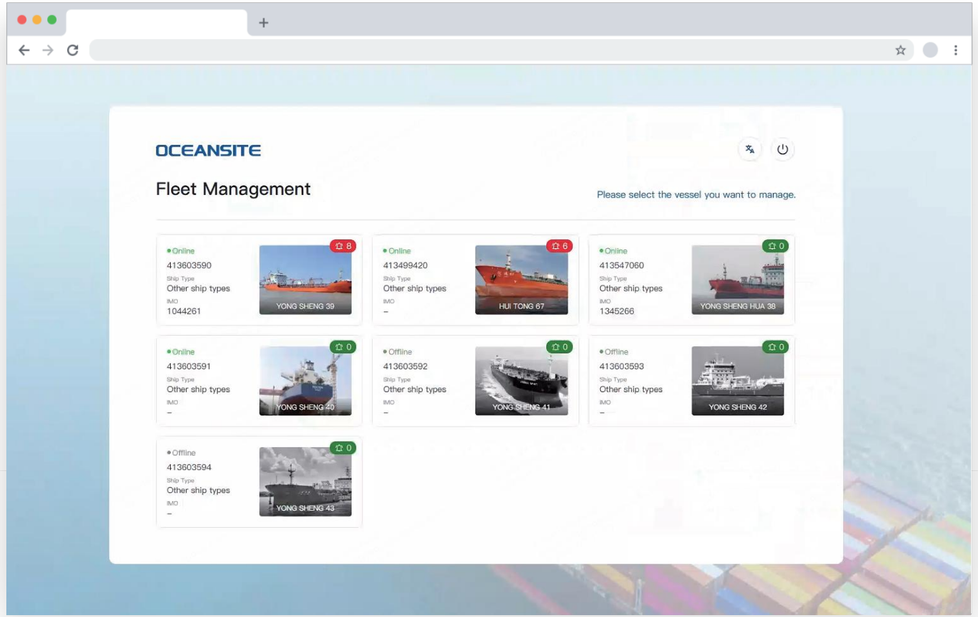
3.3.5 Basic Modules

Basic Function



Typical network topology of ship-shore integrated solutions.

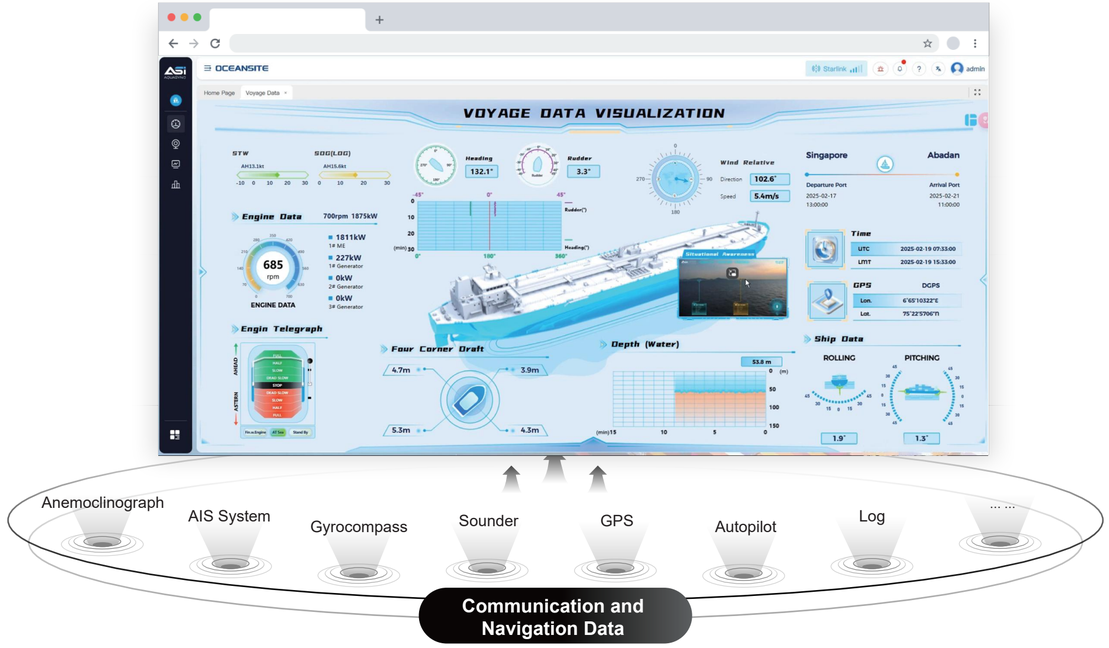
Fleet Management



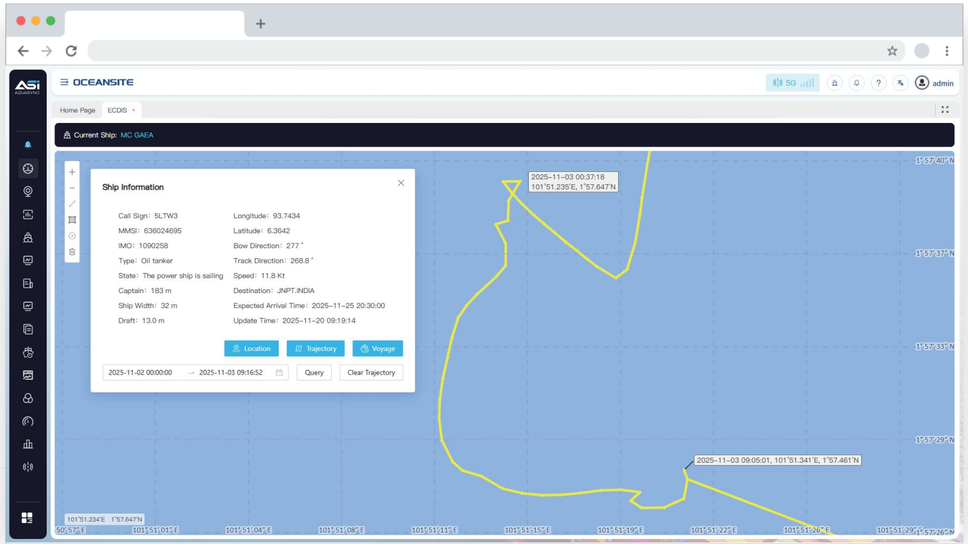
Fleet List

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

Voyage Data Visualization



Electronic Chart



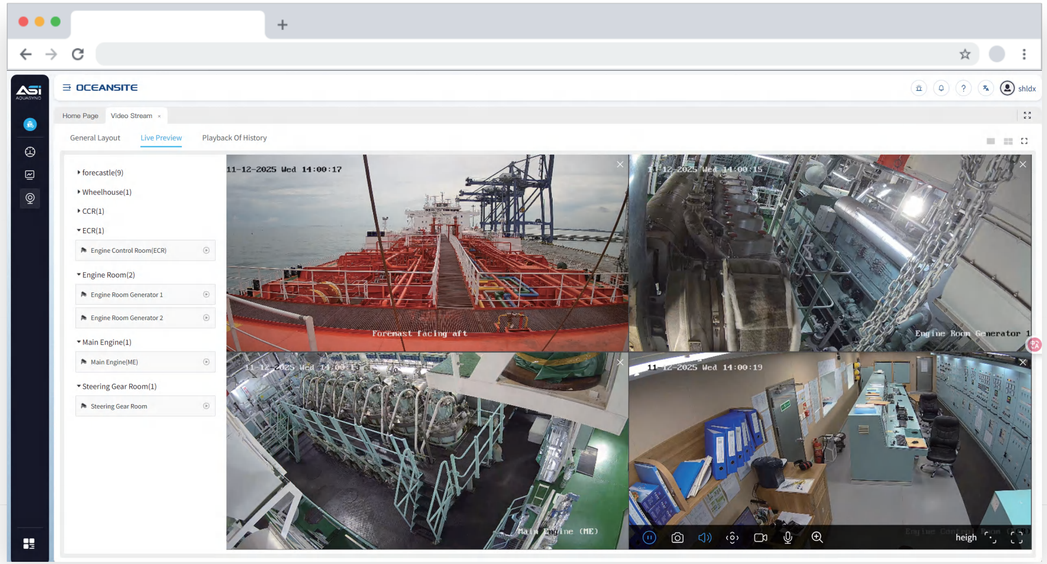
Global Online Nautical Chart

Ship Position Information

Trajectory Information

Display of Signal Overlay Trajectory

CCTV

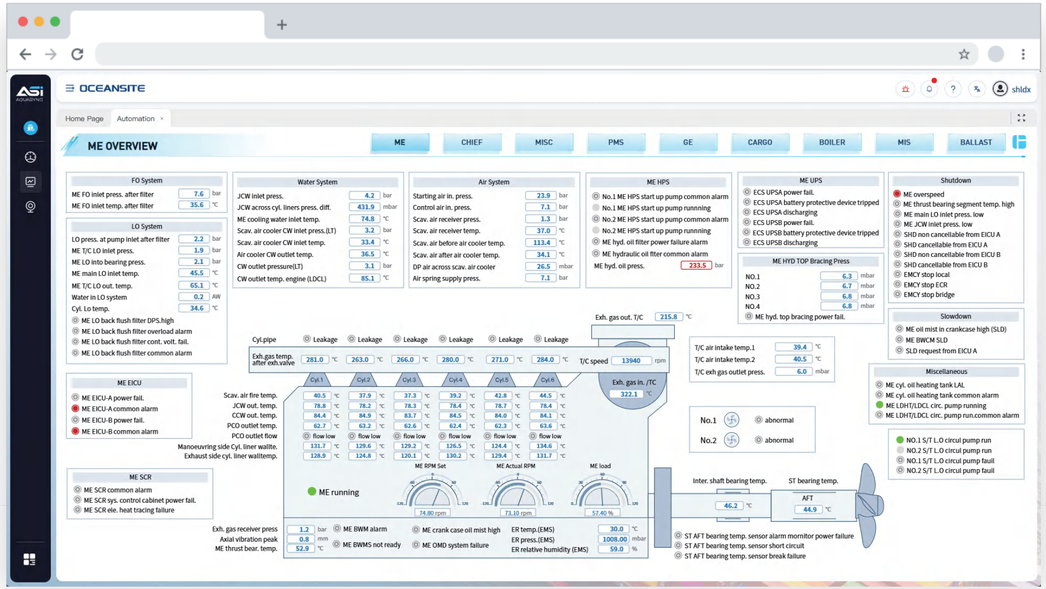


CCTV remote access

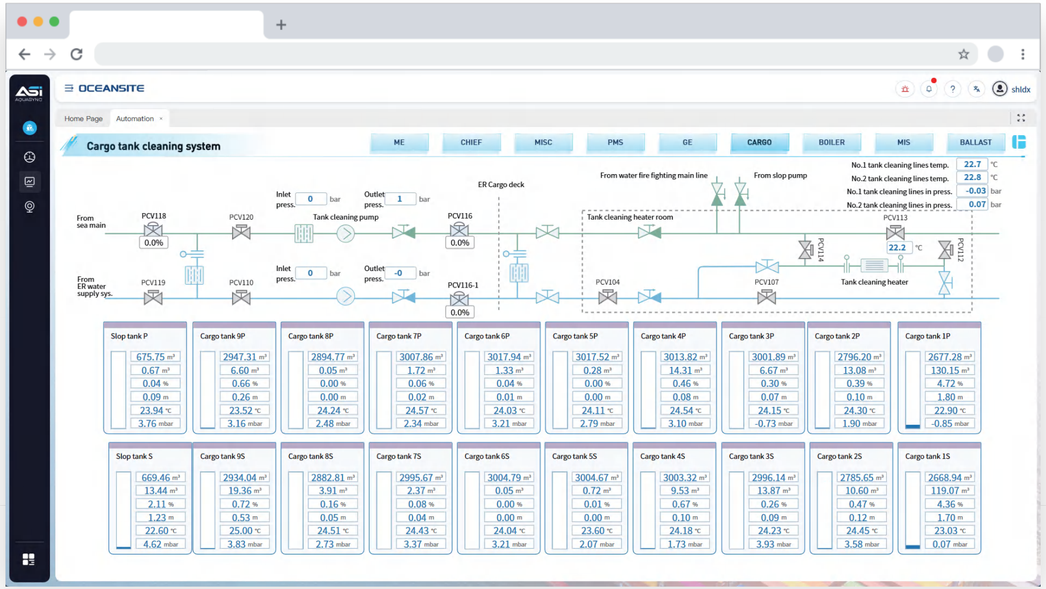
Easily access live and replay videos from different areas of a ship, supporting functions such as screenshotting, intercom, and PTZ control.

Comprehensive Monitoring and Alarm

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

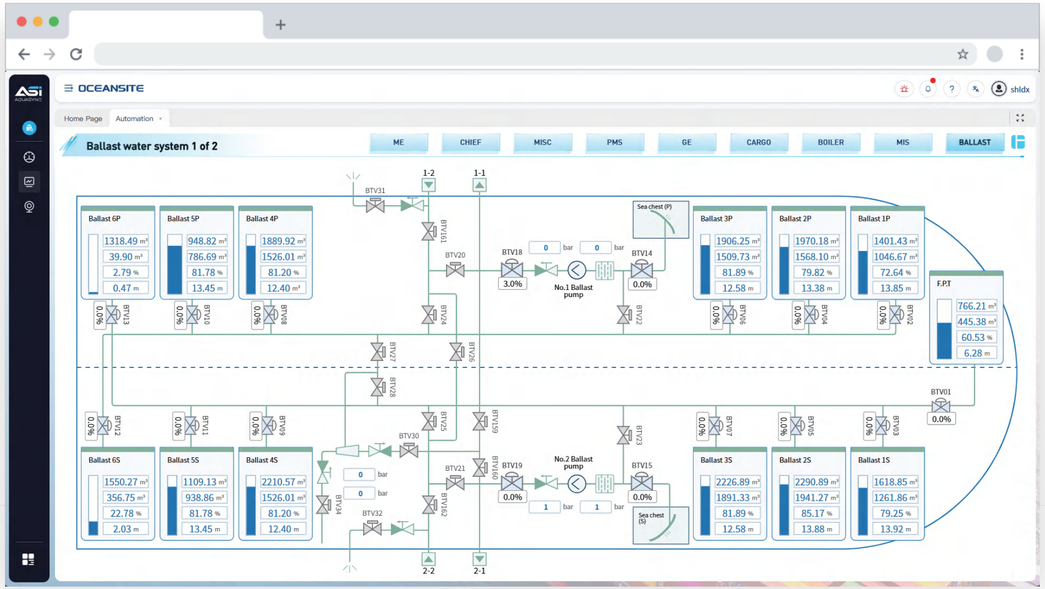


AMS

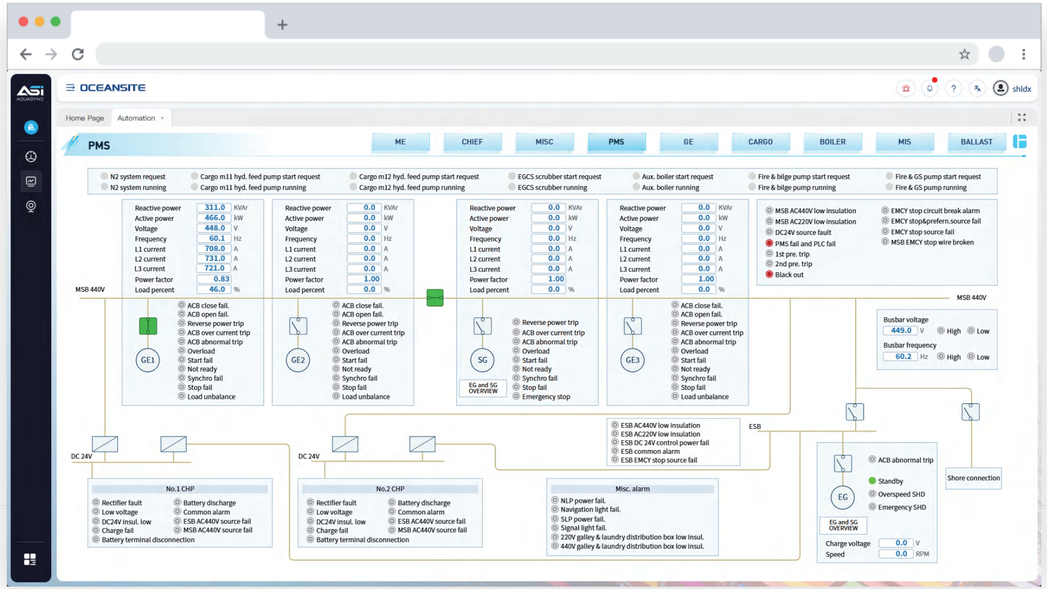


CMS

Comprehensive Monitoring and Alarm



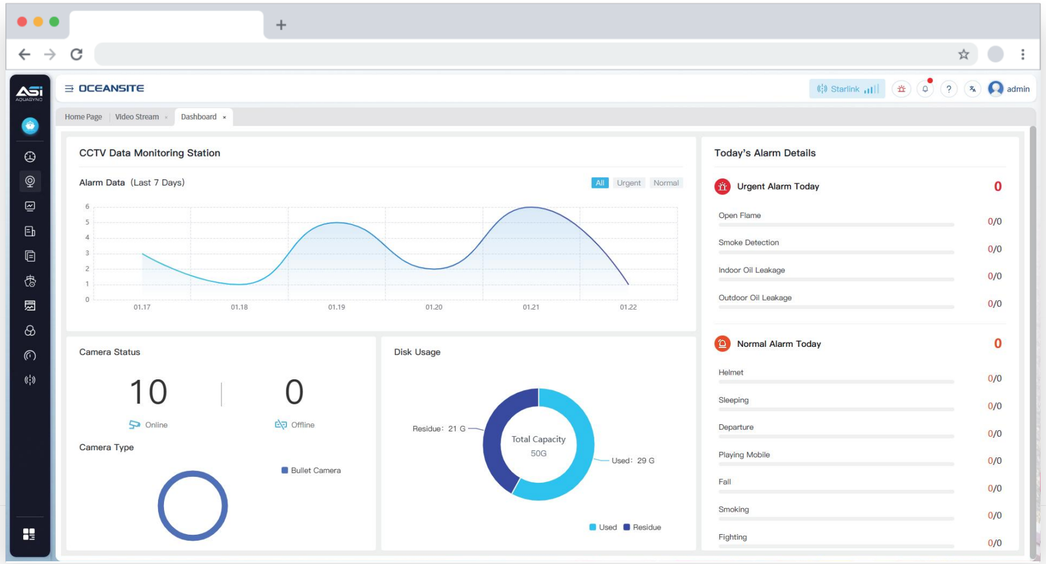
VRC&LGS



PMS

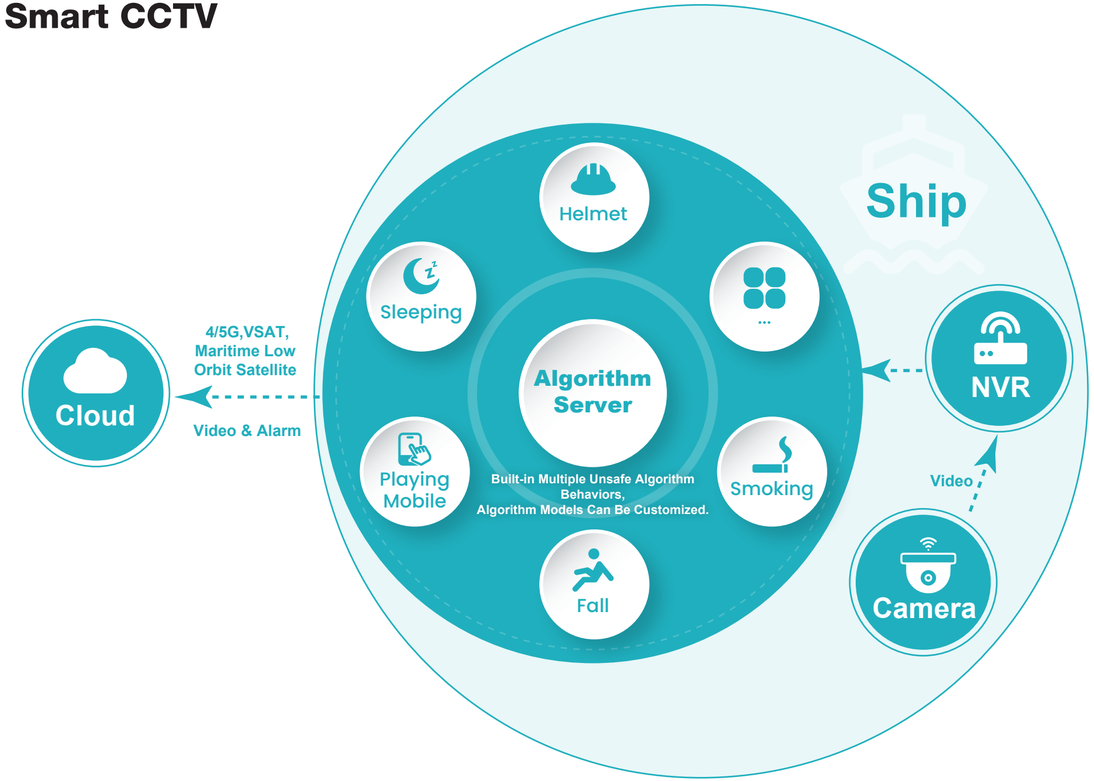
3.3.6 Extended Modules

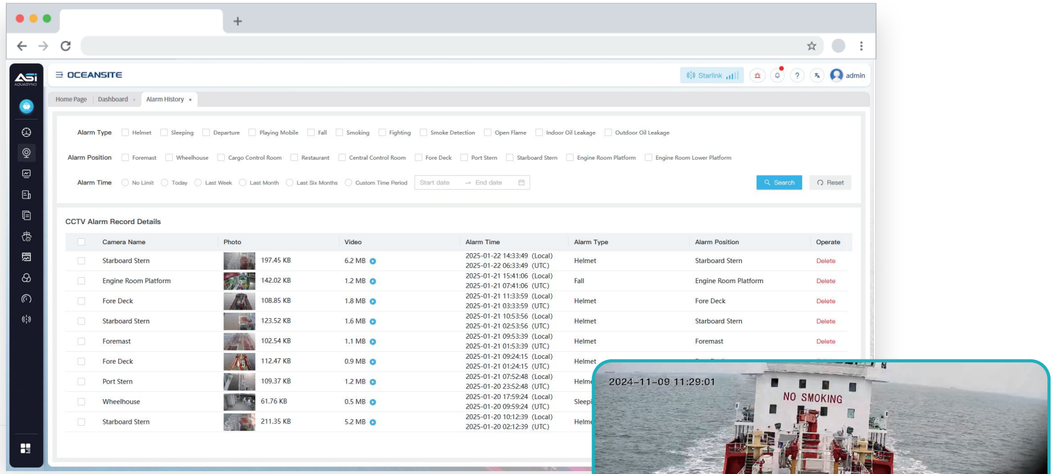
Smart CCTV



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

Smart CCTV





Unsafe Behavior Photos

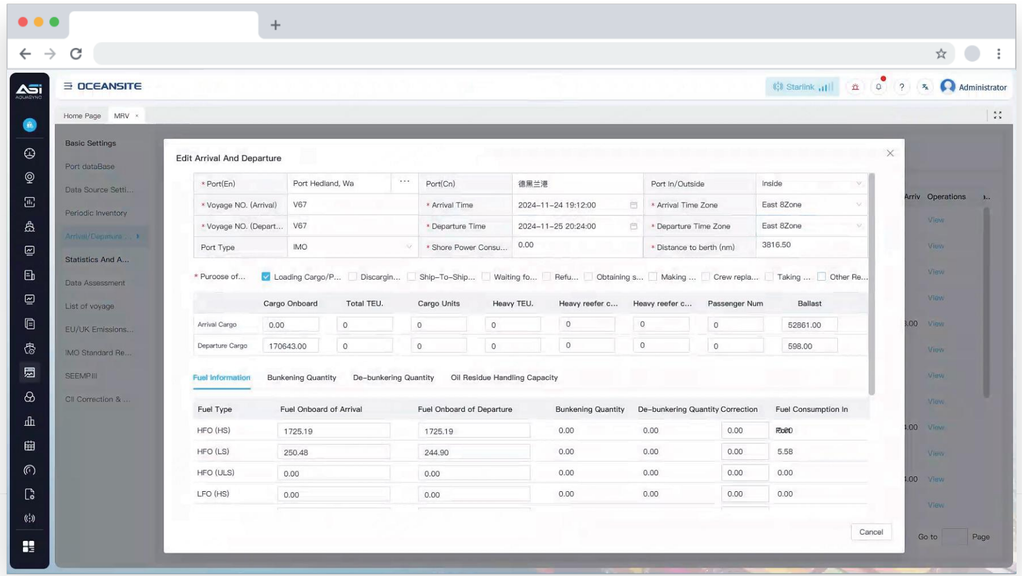
Alarm Notification

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.

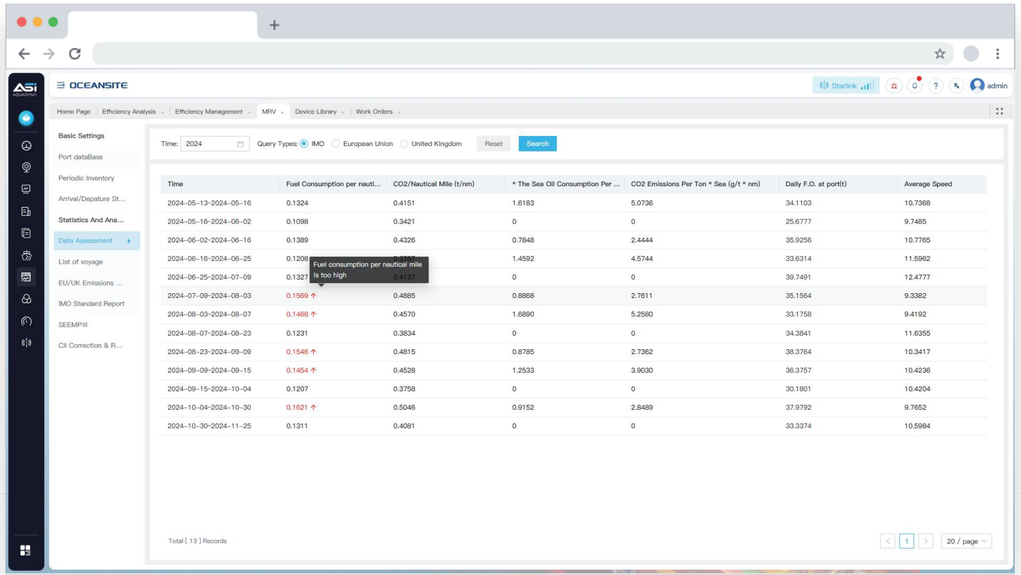
MRV Energy Efficiency Management



Voyage Information

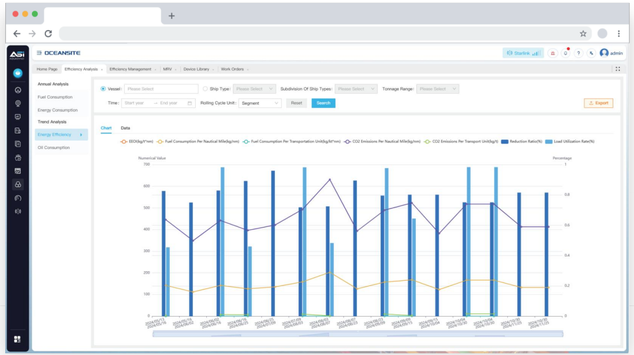
Cargo Information

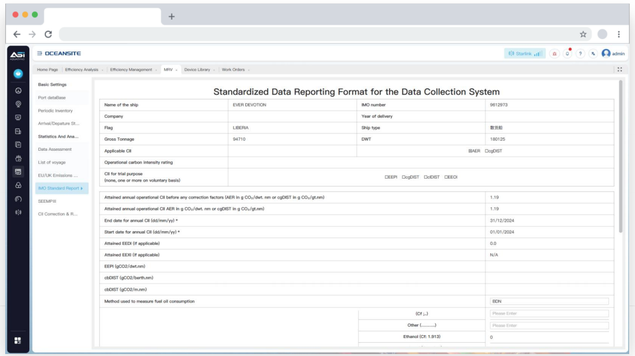
Fuel Information



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

MRV Energy Efficiency Management



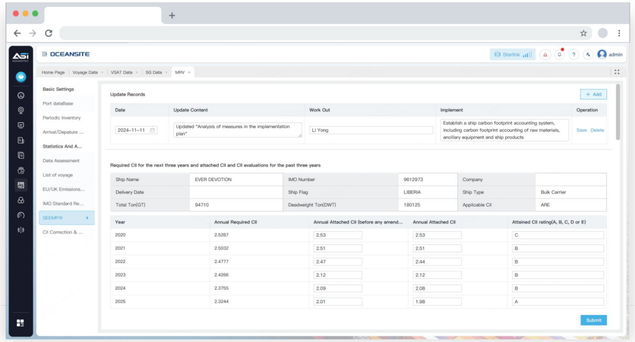


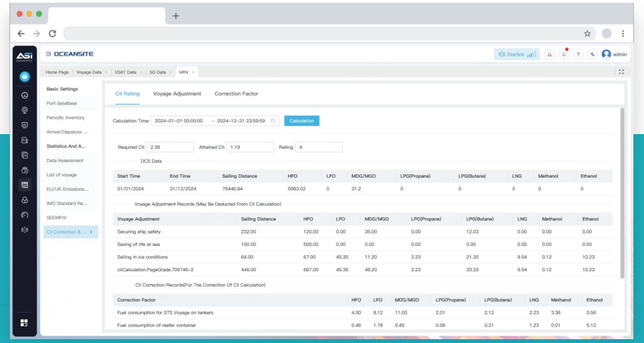
Energy Efficiency Trend Analysis

- 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)





Fill in Ship Energy Efficiency Management Plan Prat III

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

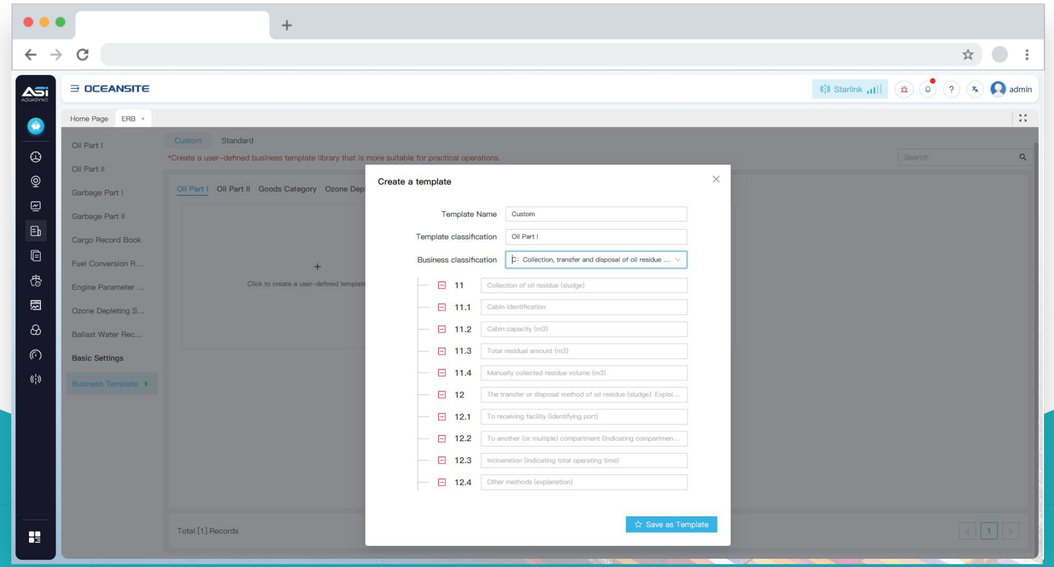
CII Caicuaion and Rating

Complete the annual energy efficiency data compilation and CIIrating.

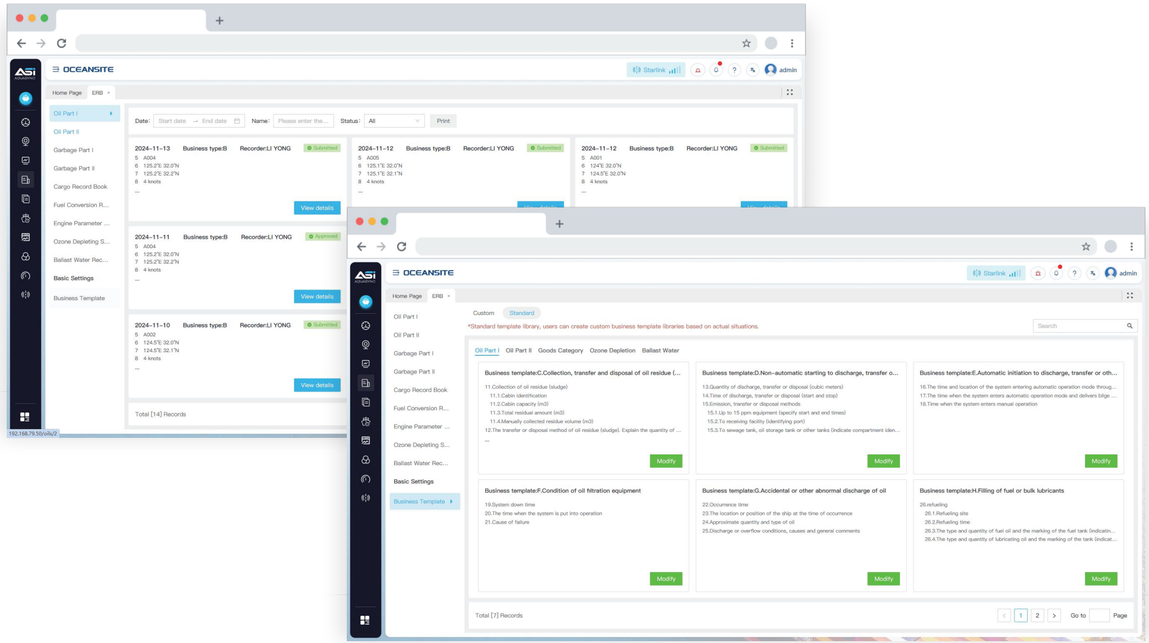
Electronic Record Book

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

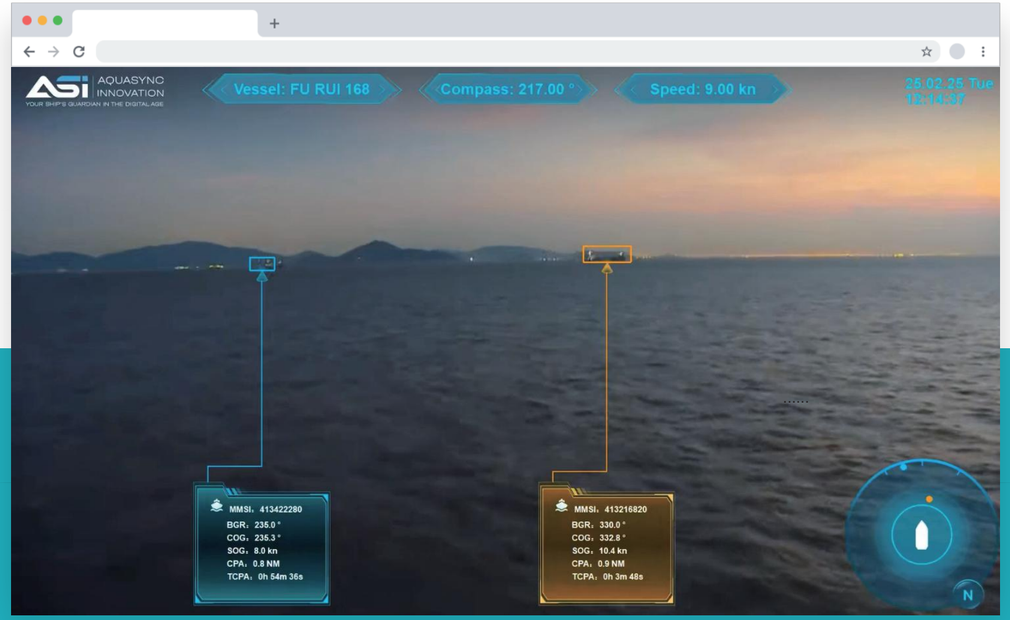
Content Printable

Traceability

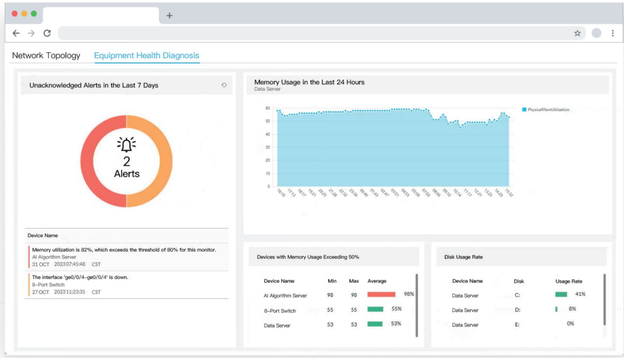
Situational Awareness

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.

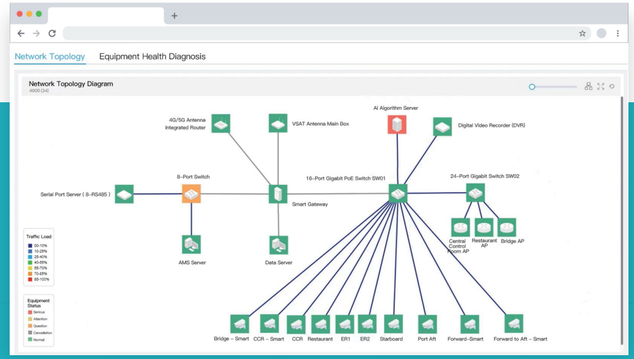


Network Monitoring



Equipment Status Monitoring

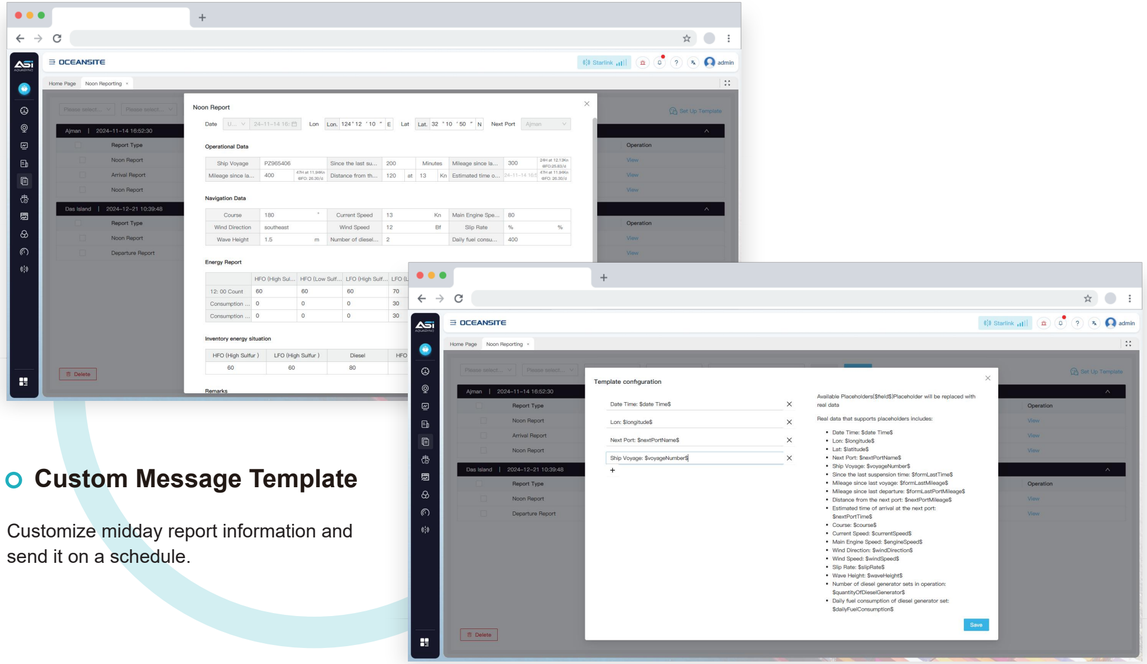
1.Display the operating parameters of core network equipment.
2.Issue alarm notifications for abnormalities.



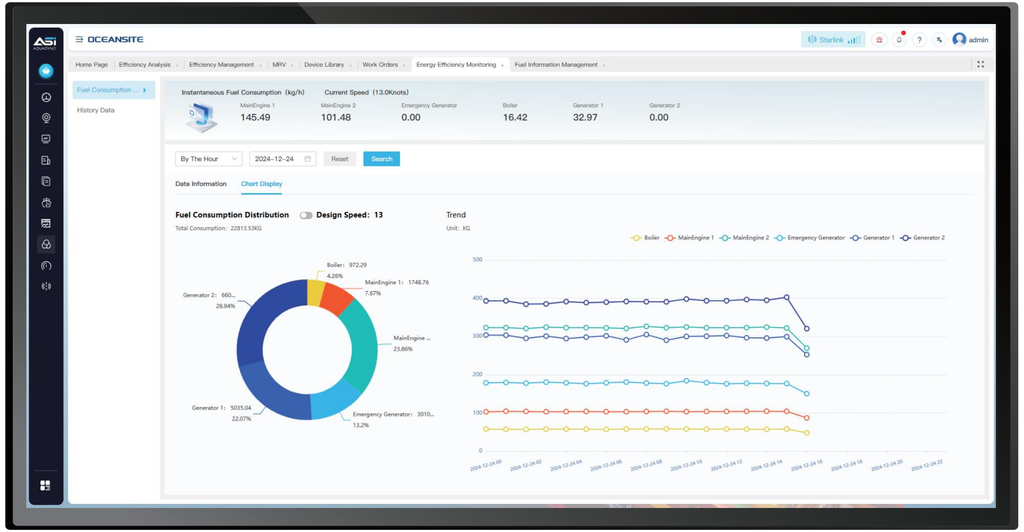
Network Topology Diagram

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

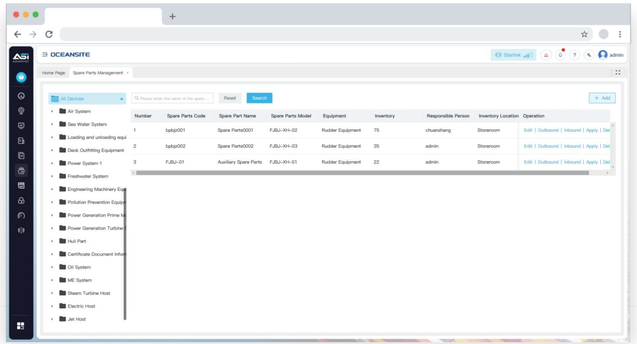
Noon Report

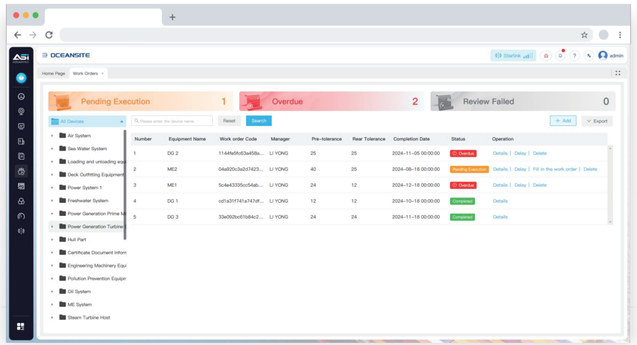


Fuel Monitoring



Plan Maintenance System



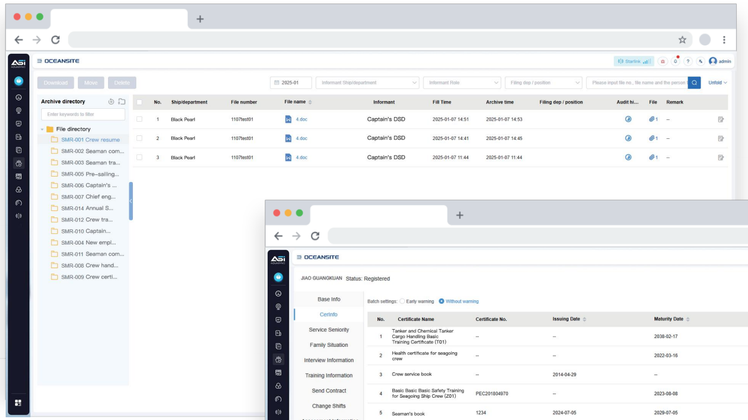


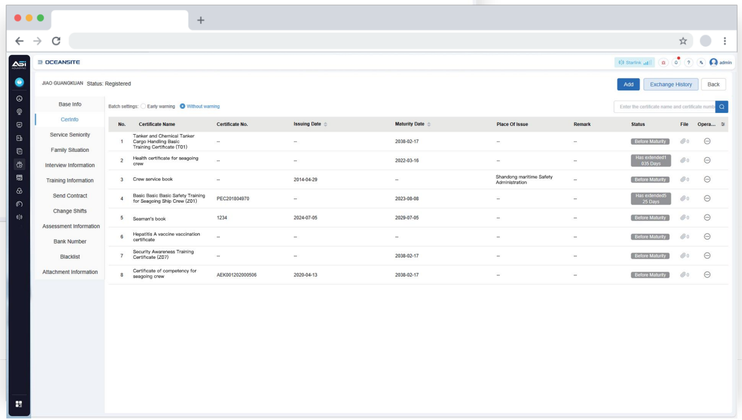
Maintenance Plan Generation and Warning

Spare Parts Management and Inventory Warning

Spare Parts Information Linkage

Filling Out and Approving Work Order Report





Crew Information Management

System Document Management