CONNEXONE CASE STUDY

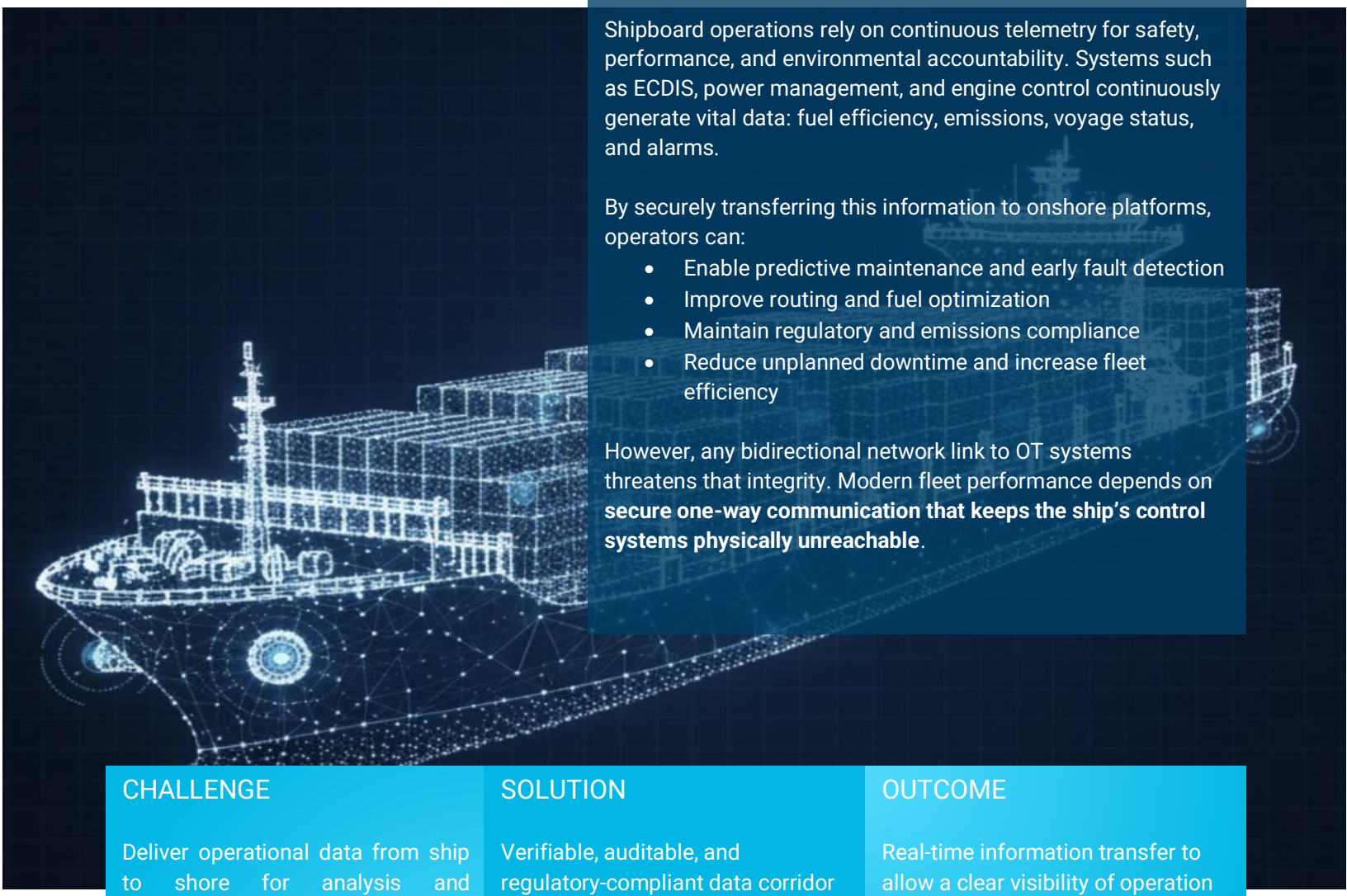
MARITIME INDUSTRY

ANY PROTOCOL DATA WHERE

CONNEXITE

INDEX

SECURING HIGH PERFORMING FLEET OPERATION



Shipboard operations rely on continuous telemetry for safety, performance, and environmental accountability. Systems such as ECDIS, power management, and engine control continuously generate vital data: fuel efficiency, emissions, voyage status, and alarms.

By securely transferring this information to onshore platforms, operators can:

- Enable predictive maintenance and early fault detection
- Improve routing and fuel optimization
- Maintain regulatory and emissions compliance
- Reduce unplanned downtime and increase fleet efficiency

However, any bidirectional network link to OT systems threatens that integrity. Modern fleet performance depends on **secure one-way communication that keeps the ship's control systems physically unreachable**.

CHALLENGE

Deliver operational data from ship to shore for analysis and compliance without creating a pathway back in.

SOLUTION

Verifiable, auditable, and regulatory-compliant data corridor between ship and shore.

OUTCOME

Real-time information transfer to allow a clear visibility of operation required for performance, security, operation and business analysis.

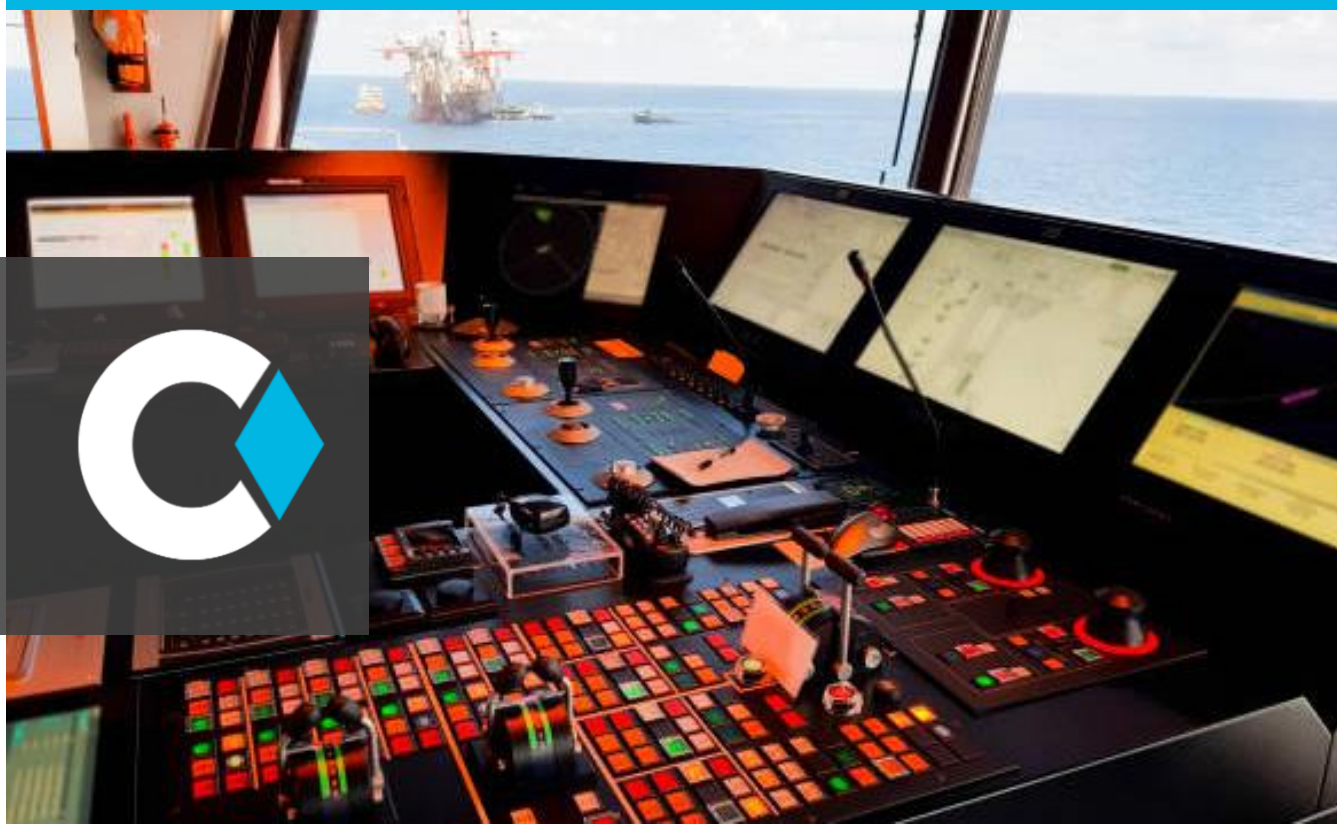
SOLUTION OVERVIEW

ConnexONE enforces absolute one-way data flow—allowing information to move from the ship's Operational Technology (OT) zone to the Information Technology (IT) or shore network, while **making any inbound path physically impossible**.

Unlike firewalls or VPNs that rely on configuration rules, ConnexONE is built on **hardware-enforced optical isolation**, guaranteeing data can only travel outward. The solution:

- Understands and filters operational protocols (Modbus, MQTT, OPC-UA, NMEA)
- Transfers selected data to secure receivers or databases
- Verifies data integrity and prevents tampering
- Requires no remote administration or inbound management access

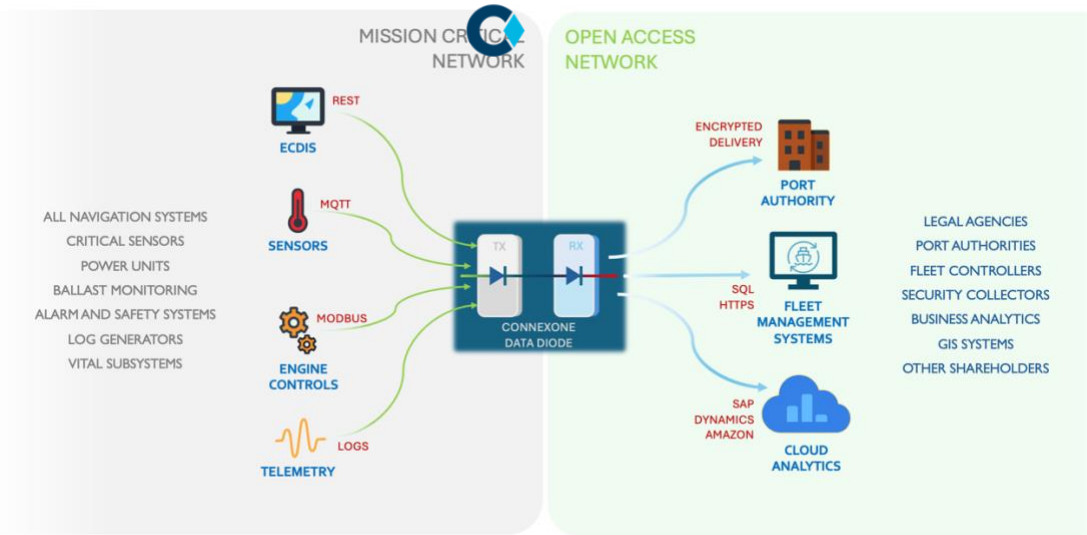
The result is a verifiable, auditable, and regulatory-compliant data corridor between ship and shore.



Solution Components

All ConnexONE diode pairs provide transparent one-way transmission for industrial and maritime protocols.
Each pair includes:

- **TX Module (Ship OT-side):** Collects and transmits OT data securely.
- **RX Module (Ship IT/Shore-side):** Receives, reconstructs, and forwards data to local systems.
- **Protocol Adapters:** Built-in support for MODBUS, OPC-UA, MQTT, Syslog, and NMEA.
- **Integrity Layer:** Ensures packet completion and prevents replay or corruption.
- **Optional Redundancy:** Dual-channel operation, buffered transmission, and tamper detection for harsh maritime environments.



Application

ConnexONE integrates naturally into ship–shore workflows. Typical deployments include:

- **Fleet Performance & Voyage Analytics:** Securely export navigation and engine data to Fleet Operation Centers.
- **Predictive Maintenance:** Forward machinery telemetry to OEM support without any inbound remote access.
- **Regulatory Reporting:** Send emissions and fuel consumption logs to compliance systems automatically.
- **Security Monitoring:** Export OT system logs and diode health data to central SOCs for visibility.

All configuration remains local to the protected side; no data is stored permanently, ensuring transient, real-time visibility only.

OUTCOME

ConnexONE delivers real-time data flow with zero inbound risk.

Ship operators maintain full operational visibility, meet IMO, NIS2, and USCG compliance, and guarantee that critical OT systems stay isolated from external networks.

Key results include:

- Continuous, tamper-proof data transmission to shore
- Verified compliance for cyber-secure architecture
- Reduced maintenance costs through proactive insight
- Improved trust with regulators, insurers, and charterers

The result is modern fleets remain connected, compliant, and resilient
Secure data out, nothing back in.

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