Whitepaper

Ports, Vessels, and the Power of the Cloud

How AWS and Insight are engineering the future of maritime operations

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0344 846 3333 | uk.insight.com

From Sea Blindness to Strategic Clarity

Authored by:

Steven Hemmings
Client CTO, Insight

John Chatterton
Senior Consultant, Cloud & Data Centre, Insight

INTRODUCTION

The global maritime industry underpins over 80% of world trade[1]. It connects economies, sustains supply chains, and supports critical infrastructure from ports to offshore energy platforms. Yet for all its strategic importance, the sector remains one of the least digitally mature industries in the world. Research suggests that up to 85% of maritime operations still rely on paper-based processes[2], and fragmented technology estates continue to define the landscape from vessel to shore.

That is beginning to change. Fast.

Regulatory convergence, commercial pressure, and the rapid maturation of cloud and AI technologies are creating an inflection point. Maritime organisations are moving from experimentation to execution. They are no longer asking whether to transform. They are asking how.

As Insight's Client CTO and Solution Architect working at the intersection of cloud, data, and maritime operations, we see this shift first hand. And we believe the partnership between Insight and Amazon Web Services represents a unique opportunity to accelerate it.

This article explores what AWS can do for the maritime industry as a whole, how Insight brings it all together as a Solutions Integrator, and why the time for decisive action is now.

The Forces Reshaping Maritime

Regulatory pressure is no longer distant

Five major regulatory frameworks are converging simultaneously. The EU's NIS 2 Directive is raising the bar for cybersecurity across critical infrastructure. The IMO's maritime cyber risk management guidelines demand demonstrable resilience. The EU Corporate Sustainability Reporting Directive (CSRD) requires transparent emissions and environmental reporting. The Cyber Security and Resilience Bill is tightening obligations for UK operators. And broader data sovereignty requirements are forcing operators to rethink where and how they process sensitive information.

These are not abstract policy discussions. They carry operational consequences, financial penalties, and, in some cases, the withdrawal of a licence to operate.

Cyber risk is escalating

Maritime cyberattacks surged by over 100% year on year between 2024 and 2025[3]. Seventy-one percent of maritime leaders now rank cyber as their number one operational risk[4]. The convergence of IT and OT environments, where operational technology systems aboard vessels and in ports are increasingly connected to enterprise IT networks, creates an expanded attack surface that many organisations are not yet equipped to defend.

The Data Opportunity Remains Underexploited

Modern vessels generate enormous volumes of data from engine telemetry and fuel systems to AIS positioning, weather feeds, and cargo sensors. Ports accumulate data from cranes, gates, environmental monitoring, and logistics networks. Yet most of this data remains siloed, underanalysed, and disconnected from the decisions it could inform.

The organisations that learn to unify, govern, and act on this data will gain a significant competitive advantage.

AWS Competency Programme and Certifications

AWS established the AWS Competency Programme and certifications to help customers identify Consulting and Technology Partners with deep industry experience and expertise.

Competencies

Certifications

What AWS Brings to Maritime:
A Platform for the Entire Transformation

AWS is not a point solution for a single maritime challenge. It is a comprehensive platform that addresses the full spectrum of modernisation, from foundational cloud infrastructure to advanced AI and edge computing. Here is how we see the opportunity across four critical domains.

1. Infrastructure, Cloud Engineering, and Hybrid Architecture

Maritime organisations operate in uniquely complex environments. Shore-based data centres must connect seamlessly with vessels at sea, often over constrained and intermittent satellite links. Ports require real-time processing at the edge. Global fleets demand consistency across jurisdictions.

AWS provides the cloud foundation for this complexity

- **AWS Landing Zone Accelerator** and Control Tower establish secure, governed multi-account environments that scale across regions and operational boundaries.
- **AWS Well-Architected Framework** ensures workloads are designed for reliability, security, performance, and cost efficiency from the outset.
- **AWS Outposts** extend AWS infrastructure to on-premises and edge locations, enabling hybrid architectures that bridge shore and ship.
- **Transit Gateway** simplifies network connectivity across distributed environments, ensuring data flows securely between vessels, ports, and central operations.

Insight brings the architecture-led approach that makes this real. We design landing zones, govern multi-account structures, and ensure that hybrid environments are not just technically sound but operationally sustainable.

2. IT/OT Convergence and Smart Operations

The convergence of IT and OT is perhaps the most transformative, and most complex, challenge facing maritime operators. Sensor networks, industrial control systems, and digital twin platforms must integrate with enterprise IT environments without compromising safety or security.

AWS has deep capabilities in this space:

- **AWS IoT Core** provides secure, scalable device connectivity for sensors and operational equipment.
- **AWS IoT SiteWise** collects, structures, and analyses industrial data at scale, turning raw sensor feeds into actionable operational insight.
- **AWS IoT TwinMaker** enables the creation of digital twins – virtual representations of physical assets and environments that support simulation, monitoring, and predictive analysis.
- **AWS Greengrass** extends cloud intelligence to edge devices, enabling local processing where connectivity is limited.
- **Amazon Rekognition** and Panorama deliver computer vision capabilities for safety monitoring, cargo inspection, and environmental compliance at the edge.
- **Amazon Kinesis** provides real-time data streaming for time-critical operational decisions.

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The potential is significant. Port operators can build digital twin platforms that optimise berth planning, monitor environmental conditions, and predict equipment failure. Fleet operators can deploy edge-based AI for deck safety, engine diagnostics, and fuel efficiency. Logistics networks can achieve real-time visibility across the entire supply chain.

3. Cybersecurity, Identity, and Resilience

Given the regulatory and threat landscape, cybersecurity cannot be an afterthought. It must be embedded into the architecture from the ground up.

AWS provides native security services that integrate across the entire environment:

- **Amazon GuardDuty** delivers intelligent threat detection across accounts, workloads, and data.
- **AWS Security Hub** provides a centralised view of security posture and compliance status.
- **AWS IAM Identity Centre** manages access across applications and accounts with centralised identity governance.
- **Amazon Macie** discovers and protects sensitive data across cloud storage.
- **Amazon Inspector** automates vulnerability management across workloads.
- **AWS Network Firewall** provides fine-grained network protection.

These services integrate with specialist partner solutions for SOC/MDR, Zero Trust architecture, and incident response, creating a layered security model that meets the requirements of NIS 2, IMO guidelines, and Critical National Infrastructure obligations.

Insight helps maritime and critical infrastructure operators embed these capabilities into a defensible, regulator-ready architecture – aligning Zero Trust, identity, and incident response across IT and OT environments from day one.

4. Digital Strategy, Architecture, and AI Advisory

Technology adoption without strategic alignment delivers complexity, not value. Maritime organisations need partners who can connect cloud and AI investment to board-level priorities: operational resilience, sustainability, cost efficiency, and competitive differentiation.

AWS Professional Services, combined with Insight's architecture-led advisory capability, provides:

- **Enterprise and solution architecture** that connects technology decisions to business outcomes.
- **Cloud strategy and data strategy advisory** that ensures investments are sequenced, governed, and measurable.
- **AI readiness assessments** that identify high-value use cases and build the data foundations required to scale.

Insight's Rapid AI framework, already proven across enterprise use cases, accelerates this process for maritime organisations:

- **Envision (1–2 weeks):** Define priority use cases, align on maritime KPIs, and prove feasibility using synthetic data.
- **Build (2–3 weeks):** Construct a functional prototype in a controlled environment.
- **Assure (3–4 weeks):** Deploy to early-adopter vessel champions, defining production-grade security and governance.
- **Scale (8–12 weeks):** Full fleet integration with user enablement and real-time monitoring.
- **Evolve (ongoing):** Continuous refinement, adoption of new AWS innovations, and AI governance.

This is not a theoretical framework. It is a delivery methodology designed to reduce risk and ensure AI survives the transition from the lab to the fleet.

InsightCloud® Care for AWS: Governing the Investment

Modernisation does not end at deployment. Maritime organisations operating complex cloud environments across global fleets need ongoing governance, cost optimisation, and expert support.

InsightCloud® Care for AWS provides exactly that:

- **Optimise:** Cloud Health Management portal, RI and Savings Plans advisory, resizing recommendations, and utilisation summaries delivered by certified AWS specialists.
- **Acquire:** Simplified procurement, consolidated billing, and extended credit terms that reduce administrative overhead and improve financial planning.
- **Consume:** Expert guidance from Insight's Cloud Success Managers, ensuring your AWS environment remains secure, efficient, and aligned to operational goals.

For maritime organisations managing cloud spend across distributed operations, InsightCloud® Care provides the visibility and control required to ensure every pound of investment delivers maximum value.

AWS Marketplace: Simplifying Procurement for Maritime

Maritime IT teams face a unique procurement challenge. Global operations, multiple jurisdictions, and diverse vendor landscapes create complexity that slows adoption and increases risk.

AWS Marketplace addresses this directly:

- **Find, buy, and deploy** maritime-relevant software and data solutions through a single, governed channel.
- **Consolidate billing** under AWS for improved financial governance and reporting.
- **Standardise terms and renewals** across ISV relationships, reducing administrative burden.
- **Accelerate deployment** of approved solutions with minimal procurement overhead.

Insight supports every stage of Marketplace adoption, from discovery and evaluation through to governance, optimisation, and integration into existing cloud environments.

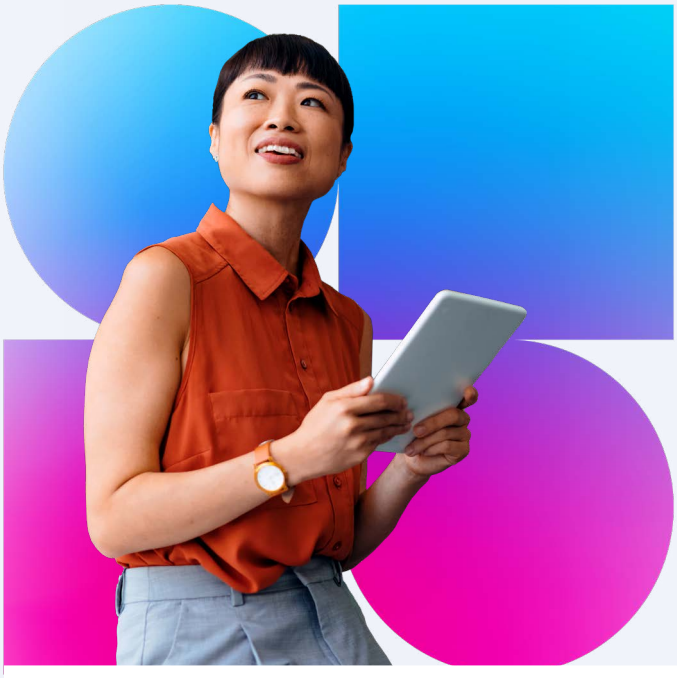
Why Insight and AWS for Maritime

The maritime sector does not need another technology vendor offering isolated products. It needs a partner who can connect strategy to execution, integrate complex multi-vendor environments, and deliver measurable outcomes across the full technology lifecycle.

As the leading Solutions Integrator, Insight brings:

- **Architecture-led delivery** that connects cloud, AI, IoT, and security into coherent, scalable solutions.
- **A proven Rapid AI framework** that moves from idea to validated prototype in weeks.
- **InsightCloud® Care for AWS** that ensures ongoing governance, optimisation, and expert support.
- **AWS Marketplace expertise** that simplifies procurement and accelerates ISV adoption.
- **Deep maritime sector understanding** developed through sustained engagement with fleet operators, port authorities, and the broader maritime ecosystem.

AWS provides the platform. Insight provides the integration, the architecture, and the accountability.



Together, we help maritime organisations

go from hype to how.

What Next?

- Book a Maritime AI Discovery Session to identify your highest-value use cases.
- Request an InsightCloud® Care for AWS review to optimise your current cloud investment.
- Explore AWS Marketplace for Maritime to simplify your software procurement.

CONTACT

AWSSalesUK@insight.com

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