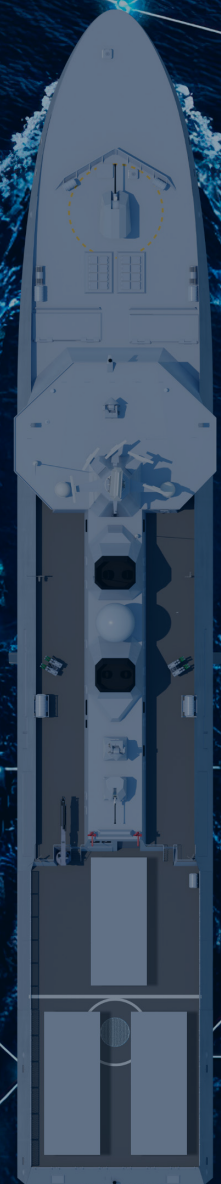


# Unlocking the full potential of hybrid fleets

*Standardised integration as the critical enabler*



## Executive summary

The hybrid navy - described by the Royal Navy's First Sea Lord, General Sir Gwyn Jenkins, as "a vision for a fleet transformed: a mix of crewed, uncrewed and autonomous platforms" - represents a fundamental shift in maritime operations.

Promising greater flexibility, scalability, and operational efficiency, hybrid fleets are rapidly becoming central to modern naval strategy.

As General Sir Gwyn Jenkins stated:

*"The pace of technological change will never be as slow again as it is now. In the 21st century, agility, adaptability and innovation have become the decisive factors in conflict."*

And critically:

*"It is only through blending the conventional and the new that we will achieve this."*

Yet this evolution also introduces significant complexity.

The future of maritime capability will not be determined by the number of platforms deployed, but by the ability to integrate them into a unified, adaptive, and resilient force.

This paper argues that standardised integration is the decisive enabler of hybrid fleet capability.

## The rise of hybrid fleets

This transition is already underway. Naval forces are already exploring how mission modules, modular payloads and autonomous platforms can be integrated into future fleet architectures.

The U.S. Navy's "**containerized capability campaign plan**" focuses on rapidly deploying modular weapons, sensors, and mission systems across existing platforms.

Similarly, the Royal Navy's "**Hybrid Navy**" concept is advancing modular weapon fits, unmanned systems integration, and frigate-drone teaming concepts.

However, as fleets become more distributed and technologically diverse, the challenge shifts from platform capability to operational cohesion.

# The integration challenge

Systems may perform effectively in isolation, but not necessarily together. This creates friction, including:

- Fragmented command and control
- Limited interoperability
- Increased operator workload
- Risk of future technology adoption failing

Without standardised integration, the strengths of hybrid fleets - modularity, diversity, and faster technology insertion - risk becoming liabilities rather than advantages.

## From complexity to cohesion

To unlock the full potential of the hybrid fleet, standardised integration must be treated as a core operational capability - not an afterthought.

As US Chief of Naval Operations Admiral Daryl Caudle stated:

*“There should be no reason why I can’t place a modular container on the back of our ships and carry an array of capabilities to any region in the world. Now, that sounds simple,”*

*“But there must be real engineering behind it... What goes inside? What’s the interface? Is it standardized to the combat and communication systems?”*

That engineering challenge defines the integration problem: not simply deploying modular capability but ensuring it functions coherently across a distributed fleet. This requires three foundational elements.

## Critical success factors for an integrated hybrid fleet



### Interchangeability by design: can systems connect?

Standardised interfaces and open architectures are essential to avoid vendor lock-in and enable seamless interchangeability between modular payloads without re-engineering or bespoke integration.



### Data-centric integration: can systems share information?

Data is the connective tissue of the hybrid fleet. A shared data framework enables real-time monitoring, coordinated decision-making, autonomous collaboration, and faster operational response.



### Scalable visibility: can systems be monitored as one?

Operators need a unified view of mission module, modular payload and unmanned system performance across the fleet. Centralised visibility and distributed control improve coordination, responsiveness, and decision-making.

# Benefits of an integrated hybrid fleet

When these integration principles are implemented, hybrid fleets unlock:

- Cross-platform deployment of mission modules and payloads
- Seamless connectivity between systems
- Fleet-wide mission module visibility
- Efficient mission reconfiguration
- Future-proof integration of new technologies and autonomous capabilities

## CUBEDIN: Seamlessly integrating hybrid fleets

The challenge outlined in this paper is not conceptual - it is operational, and the exact problem CUBEDIN exists to solve.

CUBEDIN simplifies the integration, monitoring, and management of mission modules and modular payloads deployed across hybrid fleets. Here's how:



### **ModuLink**

Standardised physical and digital interfaces connect mission modules across platforms, supporting power, cooling, data, and services in line with ANEP 91/99 standards for consistent and faster integration across the fleet.



### **ModuFleet**

Real-time visibility of mission module status, health, readiness, and deployment configurations from a single operational view.



### **ModuPlan**

Enabling operators to plan, allocate and manage mission modules across hybrid fleets, ensuring compatibility, readiness and efficient mission reconfiguration.

## Conclusion

The future maritime battle space will not be defined by isolated ships or autonomous systems operating independently, but by connected ecosystems of mission modules, crewed vessels and unmanned systems operating together at scale.

The transition toward hybrid fleets is already underway - and CUBEDIN makes it possible. *One interface, any mission.*