



MASTERS OF COMPLEXITY

Evan Butler reveals why visibility and control are the keys to naval asset readiness

The naval support landscape is changing. Assets and equipment are getting more complex, and delivery and support increasingly globalised. The Navy now has to deal with a complex portfolio of stakeholders involving military organisations, OEMs, contractors and third-party providers maintaining equipment via service-based

agreements, working together to deliver a single, operationally focused outcome. For the Navy to deliver the required degree of asset readiness, IT systems must move from simply a transactional tool into a real strategic enabler.

The Royal Navy is forward looking in its procurement of new naval assets. Eight Type 26 Global Combat Ships have been ordered to replace the eight Type 23 anti-

submarine frigates currently in service. According to the Royal Navy: “The entire class will be equipped with some of the most modern weapons systems available, including a vertical launch missile silo and 5in main gun – both of which offer improved capabilities and potential for further development throughout the ship’s life.”

Added to the challenge of supporting next-generation assets, there are demands for varied support models including contracting for capability and availability, as well as the simpler ‘acquire, buy spares and maintain’ approach. Procurement and maintenance of key assets has changed, but have IT support systems kept pace?

ASSET READINESS

Kinetic and non-kinetic warfare, diplomacy and humanitarian missions – the Navy’s job description is as varied as it gets, and asset readiness is key to operational effectiveness. From blue water and littoral vessels, to autonomous mine reconnaissance submersibles and fully functional drone warships, asset complexity continues to evolve to meet new threats.

The support chains associated with different asset types require different maintenance schedules and supply chains with different support providers. When we consider the changes occurring in the naval support chain it is easy to see why data and real time information flows are going to be key to effective maintenance, asset readiness and ultimately operational success. However, this does introduce a new challenge of being able to better acquire, transfer, represent and then use data from multiple sources to significantly impact decision-making processes.

To assure asset readiness, logistics support systems for major modern military assets need to span a vast network of players involved in the total life cycle of the asset, from OEMs and suppliers to maintenance activities and customer support.

The increasing dependence of modern defence organisations on suppliers to generate military capability requires acquisitions and through-life support contracts to be carefully structured with data shared across buyer, supplier and maintainer partnerships – most legacy IT systems cannot handle this new dynamic. Because 70 percent of total life cycle costs of complex equipment come from support and maintenance, this is an area of focus for those responsible for these public/private support networks, who need a better way to manage through-life support programmes and costs.

The specialist nature of defence equipment makes for a vast support chain. Thousands of parts are required to maintain specialised assets, with strict industry safety regulations. A primary goal is to track, monitor and deliver parts or equipment status as quickly as possible – whether on-base or at sea.

But often planners struggle to get an accurate picture of inventory or asset status, and maintenance engineers don’t know where the needed parts are, meaning delays and mistakes can occur. This is the limitation of the traditional systems structure, where different systems were designed to act as stand-alone applications. Transactional, technical and performance data can get locked into these ‘functional domains’ making it difficult to provide visibility across the entire support chain. For the Navy this can have serious implications. Disparate systems make it difficult or impossible to get true picture

of the status of all assets and their related financials. Not only will this have a direct impact on operational readiness, but also creates difficulties with audit compliance, and this disconnect between systems can result in financial write-offs for inventory items.

The other challenge in maintaining all these systems is the difficulty in establishing adequate information assurance and cyber security controls across so many – often custom-built – applications. It is often a struggle to defend against sophisticated cyber attacks and protect valuable data when different standards and access controls are imposed across organisations.

A modern naval force needs solutions that have been built to overcome the shortcomings of traditional solutions. Modern component-based IT support systems can enable the integration of MRO, performance-based logistics, project management, fleet management or supply chain management solutions to eliminate the limitation of stove-piped legacy systems.

But ‘one size fits all’ systems won’t work either. History has proven that the generic processes of monolithic systems inevitably fail to address the varying needs across many levels and organisations within a defence ecosystem. We can’t assume that the same processes required to manage spare parts for air conditioners are able to effectively manage the ship-board maintenance requirements of a fourth or fifth-generation fighter aircraft. Or have the capability

THE ROYAL NAVY NEEDS A MORE OPEN, BEST OF BREED, MODULAR SYSTEM ARCHITECTURE

to comply with the Navy’s requirement for vessels to spend months at sea operating in autonomous mode – processing work as usual and replicating the data to the master database when deployed in-theatre as well as when returning from duty for full maintenance and restock. Mandating a single system to try to achieve the multi-organisation, multi-purpose objectives is as unrealistic as expecting to achieve global force readiness with stove-pipe systems.

Instead, the Navy needs to strike a balance between openness and functionality by choosing the right software partners and deploying a small set of tools that, when combined, provide that full enterprise capability. To ensure best-of-breed functionality – and performance – for each area of operations, naval organisations need to deploy open and interoperable asset and support chain software designed to work within the Navy ecosystem with its complex needs around engineering configuration and maintenance.

But this is only achievable with supporting systems that have a well-developed suite of capabilities tailored for naval support – not a generic enterprise solution designed to support a much simpler enterprise environment. This will allow naval support and maintenance organisations to build the capabilities they need to support specific end-to-end processes that link up the overlapping elements of the support chain.

It will also mean compliance with specific regulatory frameworks, such as ensuring export control

Streamlining its information flow to provide better asset visibility remains the goal for the Royal Navy

functionality to ensure licenses are in place prior to exporting controlled goods or information.

Bringing together asset and inventory information across suppliers, manufacturers, transportation, warehousing and customers, puts the information in the hands of those making mission-critical decisions. This visibility is essential for enabling full asset readiness.

OVER COMING SHORTFALLS

Here there are insights to be gained from deployments of modern software solutions, which have overcome the shortfalls of legacy systems. Though some of the challenges of naval forces diverge from commercial applications, these purpose-built enterprise systems are already in the field and being used by leading defence contractors, shipyards and oil and gas businesses, which share similar organisational challenges.

Partnering with these providers that have decades of experience supporting both naval suppliers, defence contractors and industry is one of the most effective ways to bring in the right capabilities that are ready to go. From incorporating cyber security best practice and secure disconnected operations, to compliance, financial standards for reporting and full asset life cycle support in a defence environment.

Once you have a new architecture in place with a high degree of interoperability between selected best-of-breed systems, you need to put in place an intelligence tool to provide a full 360° view. The current stove-pipe approach and scope of most Business Intelligence (BI) tools means the Operations Commander doesn't have the full information required to accurately plan across an entire operation. In contrast to most BI tools, by deploying Enterprise Operational Intelligence (EOI) commanders gain the capability to model operations or readiness by drawing data together from the carefully selected suite of source systems.

The goal when deployed correctly is to support the readiness posture for deployed operations by accurately

identifying assets, resources and required maintenance through in-theatre visibility of operational, intermediate and depot maintenance and real-time total asset visibility (TAV) of globally deployed assets.

The 360° view enables Operations Commanders to answer if they are ready to perform an at-sea mission from an HR, material, and training perspective in a given timeframe. If the answer is no, a supporting EOI solution analyses what needs addressing to ensure the mission deadline is met. The result is better asset visibility, sustainment and availability – the three key objectives in managing and maintaining operational readiness.

To meet challenges at sea the Royal Navy fleet is changing. But this means growing the support chain and dealing with greater complexity in terms of assets and support models without inflating costs. The Royal Navy and its supporting contractors need the ability to

LOGISTICS SUPPORT SYSTEMS FOR MAJOR MILITARY ASSETS NEED TO SPAN A VAST NETWORK

maintain asset availability levels and be able to link policy changes to maintenance outcomes and achieve reductions in sustainment costs for affordable asset readiness.

This means a change in design for IT support systems and a move away from stove-piped legacy systems to more open, best of breed, modular system architecture – where naval organisations can build the IT environment that matches the unique needs of defence ecosystems without the limitations of information silos or inflexible monolithic systems. With the right reporting and intelligence tool, this will create more streamlined information flows, reduce operating costs and provide better asset visibility – shifting IT from merely a transactional tool to a serious strategic enabler ●

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– Director, Defence Product Line, Aerospace & Defence Business Unit, IFS – is responsible for ensuring that the products and services offered by IFS meet the needs of defence customers around the globe. Evan's history and knowledge of the IFS Maintenix product offering dates back to 2001 to 2011, when he occupied various leadership roles at Mxi Technologies and was involved in projects, such as the Lockheed Martin F35 Joint Strike Fighter Autonomic Logistics Information System (ALIS) and the Boeing 787 'Goldcare' system development and business model analysis.

No matter the vessel, asset complexity continues to evolve to meet new threats

