



READY FOR ANYTHING

Matt Medley reveals why 2022 is set to become the year of the Integrated Data Environment – providing the digital thread to underpin defence logistics and support

While the utilisation of software by militaries to manage IT infrastructure and mission-critical weapons systems has been quickly advancing, analysis, data collection and execution is yet to make the same technological leap forward. The advancement of this critical data backbone is essential now and will form the basis of three key developments for defence support and logistics in 2022. It will take three forms: advanced servitisation of equipment support, the digitisation of

the modern shipyard and further growth of unmanned systems on the battlefield.

There has been a lot of recent movement with military operators and their support providers modernising both supply chains and logistical processes, especially over the pandemic. The result has been the development and maturity of a lot of technologies such as augmented and virtual reality, artificial intelligence, AI, digital twins and 3D printing.

Yet processing the data gleaned from these new technologies is far from optimised. This trend is

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highlighted in a recent report by the US Government Accountability Office, which evidences the fact that the Department of Defense's own data collection and IT development has not kept up with developments in critical weapons systems used by the US military. The requirement is there and there are three key developments that will underpin the development of military logistics and support throughout 2022.

For equipment procurement and support, in recent years, the military has ascended the so-called 'transformational staircase' out of the scenario of simply buying and maintaining its own assets and equipment. The risk and availability linked with supporting an asset through its military lifecycle has increasingly involved industry assistance from OEMs or military in-service support providers. Now, performance-based logistics (PBL) is the widely accepted model for the procurement and support of military equipment. PBL strategies work effectively when applied to a specific asset or components, but these service-based agreements can even be taken a step further – what is deemed at IFS as "Total Asset Readiness" in relation to force-wide asset mobilisation and visibility.

This move towards a service-based approach for military asset support is underlined by recent research from Boston Consulting Group (BCG), which examined the cross-industry shifts towards delivering outcomes and pinpointed servitisation as: "the focus of creating and capturing value shifts from one-time sales to long-term partnerships". It's therefore no surprise that BCG report sees the defence sector prioritising the adoption of enterprise asset management (EAM) solutions in the next three years.

My prediction is for the next evolution of asset support to be focused on installing a constant and transparent framework across the entirety of a military force, connecting the military operator, OEM and in-service support providers. All separate reporting mechanisms and software systems can be consolidated within a single, all-encompassing solution, giving commanders planning operations a real-time image of each asset at their immediate disposal – tracking asset readiness within the context of the mission they need to complete.

You can see this already in progress with the US Navy's Naval Operational Business Logistics Enterprise (NOBLE) project. The programme will eliminate over 700 database/application servers and consolidate over 23 currently isolated application systems – ultimately aiming to improve asset readiness both on a shore and material basis. As part of a support agreement for the NOBLE project, Lockheed Martin and IFS will deliver an intelligent maintenance solution that will help power digital transformation of multiple legacy systems into a single, fully modernised and responsive logistics information system. The solution will support planning and executing maintenance, repair and overhaul of more than 3,000 Navy assets including aircraft, ships and land-based equipment.

My next prediction involves the digitisation of shipyards across the globe in the maritime and naval sectors. Much like the US Navy, shipbuilders, maintenance providers and other military operators are beginning to realise the value of digitising operations. ResearchAndMarkets data sees the digital shipbuilding sector poised for explosive growth – from \$591.63 million in 2019 \$2.7 billion by 2027, growing at a

CAGR of 21.1 percent. This will be fuelled by rising adoption of digital twins in the shipbuilding industry and increasing use of new manufacturing technologies.

The largest geography for this growth is expected to be the Asia-Pacific as Indian and Chinese maritime presences are set to increase, however, the US too shall see high growth. This will culminate in a host of new vessels following the Navy's vision to create a 500-ship navy to protect America's global influence and interests. As such increased orders are being made, including Gerald R Ford carriers, a new block of Virginia fast-attack submarines, frigates, destroyers and the replacement to the Ohio ballistic missile submarine to continue the American at sea deterrent. Many of which, due to complexity and modular construction techniques will help boost US digital shipyard investment and growth. There are also parallels in the UK, in 2017 the UK Royal Navy announced project NELSON, specifically designed to deliver digital transformation across the service. Project NELSON highlighted the onset of the digital information revolution, its use in global marine warfare and how harnessing emerging commercial technologies would increase the Royal Navy's military capabilities.

INVESTING IN A VERSATILE DATA-DRIVEN BACKBONE FOR LAND, SEA AND AIR IS VITAL FOR SUCCESS

As such, digital oversight of maritime and naval assets begins not at sea, but right at the beginning of a ship's lifecycle – in the design process and at the manufacturing plant. This means shipbuilders themselves will have to prioritise digital advancements in the coming years. Take IFS customer, Australia's largest defence prime contractor, submarine and warship builder ASC, that recently announced a company-wide digital transformation programme. This will set the ground for the ASC digital shipyard transition – facilitating more streamlined processes, enhanced integration between systems and the expanded use of real-time data to drive optimised decision-making across the organisation. The ASC digital transformation programme will strengthen its enterprise resource planning system and introduce advanced technologies to enable its workforce and optimise its capabilities to support the sovereign sustainment of the Royal Australian Navy's Collins Class submarine fleet, now and into the future.

Any successful naval or maritime digital transformation programme means putting in place a full Integrated Data Environment (IDE) to ensure these barriers to executing a digital transformation project are removed, requiring close collaboration from military organisations, industry players and software providers.

But in order to build a naval or maritime digital transformation programme, most organisations need a digital overhaul. They need an enterprise-breadth system that can do more than simply manage essential MRO or supply chain processes and optimise scarce resources and assets in isolation. They require a software system that's agile enough to act on the increasing

data volume and complexity to deliver quantifiable operational benefits.

We're looking further forward in my final prediction, into the world of unmanned systems and drones – which are increasing in use across land, air and sea. There is a high degree of R&D investment planned in the unmanned systems sector going forward, drones in particular are increasingly being used in military operations. In fact, according to the Drone Databook, an in-depth survey of the military drone capabilities around the globe, over 100 military organisations now have some form of drone capability – and a rising number now have combat experience using unmanned systems. The proliferation of military drones will only grow with an expected rise in spending of \$11.1 billion in 2020 to \$14.3 billion by 2029.

DIGITAL OVERSIGHT OF NAVAL ASSETS BEGINS NOT AT SEA, BUT AT THE START OF A SHIP'S LIFECYCLE

In addition to removing human soldiers from harm, unmanned systems also bring about certain operational advantages. For instance, being unencumbered by life support systems (breathing apparatus, ejection seats) means 'uncrewed' aircraft can carry larger payloads with sensors for improved intelligence and reconnaissance or carry more fuel, which allows for longer trips.

The key near-term area of focus I see with the inevitable growth of unmanned systems space is the sustainment of these military assets. As this is something military organisations are still scoping out, consider these thoughts from Australian Defence Force Captain, Stephen Wardrop: "One of the key questions that must be answered is how the Army should structure maintenance support for UAS (Unmanned Aerial Systems) into the future. UAS maintenance is much more widely scoped than just the Air Vehicle (AV) – it encompasses the Ground Control Station, launch and recovery equipment including automatic take-off/landing systems, and all communications equipment involved in controlling the receiving data from the AV and its payload(s) during flight."

DIGITAL BACKBONE

The key to drone sustainment and support is very similar to the all-encompassing ecosystem I've outlined in my first two predictions, with critical importance being placed on having an end-to-end system to link all data sources and stakeholders. This means unmanned system design, manufacturing, supply chain and aftermarket services need a digital backbone capable to support sustainment now and into the future.

As military equipment and support becomes more technologically advanced, an ever-increasing data gap will continue to grow and need to be prioritised across the entire defence value chain to make sure it does not hinder and effect future military operations or deployments. Investing in a versatile and futureproofed data-driven backbone for land, sea and air is the key to future military logistical success for OEMs, in-service providers and operators alike ●

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Picture credit: US Dept. Defense