

Prophesea™

Delivering an integrated data environment in the cloud for a NATO member country's Navy frigates



Introduction

Data lies at the heart of Defence decision-making, where staying ahead in a highly contested, increasingly digital battlespace depends on the right information reaching the right people in a timely and secure way. This is true for every part of the Defence ecosystem, including those behind the scenes working to design and maintain assets such as warships and fighter jets – in turn, making sure they are always mission-ready.

With 95% of Defence decision makers saying that technology advancements are blurring the lines between physical and digital domains, enhancing the management of data is more crucial than ever to optimising decision-making around assets. Faced with this challenge, a NATO country's Defence department sought to deliver a data centralisation programme for its Navy frigates – the backbone of its naval fleet.

The nation required one system that connected fragmented frigate data, making the information necessary to design and maintain the ships more accessible, transparent and easy to control. This way, it could improve processes, increase the efficiency of communication and reduce the risk of error for people using the data to elevate the availability of the frigates. At the same time, the department could gain greater ownership of its data, allowing it to be more agile when moving between industry suppliers.

That's where BAE Systems Digital Intelligence came in. Through an in-country partner, we worked closely with the in-service support enterprise to deliver an Integrated Data Environment (IDE) programme for its frigate data. Crucially, this was the first solution to be deployed onto a new, restricted Azure cloud environment – a project running in tandem to create the Defence department's first classified government-owned and operated cloud service.

The Challenge

Before moving the frigate data into the new cloud environment, the NATO member country was faced with a number of challenges. A key consideration was the data itself. Generated over two decades, this was spread out across four disparate legacy sources which varied in quality. This meant laying the groundwork to standardise data sets was a top priority from the outset.






Establishing business continuity and security accreditation was also essential: in a high-trust sector like Defence, any risk of downtime or breach can have severe, real-world consequences. Additionally, the country had to be aware of the work taking place adjacently to roll out the new cloud service, ensuring the maturity of this environment before migrating the frigate data.

To help navigate all of this complexity, the NATO member country needed an experienced systems integrator. It chose to work with BAE Systems Digital Intelligence through an in-country partner – a decision based on our tried-and-tested success in implementing similar Intelligent Complex Asset Management programmes for Defence organisations.

The Solution

Together, we developed an IDE programme that would enable the country's Navy frigate data to be successfully standardised, optimised and uploaded to the cloud environment.

Delivering an Integrated Data Environment – programme deliverables:

-  Detailed design documentation to define the configuration of the infrastructure and software within a secure cloud environment
-  Documentation and evidence to support the independent accreditation authority to achieve the Authority to Operate requirements
-  A single set of commercial off-the-shelf (COTS) applications from multiple vendors delivered as a single integrated capability
-  A collaborative single source of truth established on the government's controlled infrastructure in Azure
-  Data integrated in the data management layer using information standards such as ISO-10303

With business continuity front of mind, we proposed a phased delivery approach designed to stagger organisational change. To remove delays and ensure the process was as collaborative as possible between the customer, BAE Systems Digital Intelligence and the in-country partner, a joint steering committee was set-up, including a design agent, a major surface combatant and the department's information system team.

The phased approach

As a first step, the team consolidated the four disparate frigate data sources, using expert techniques and tools such as our Data Quality Tool to clean the data up and bring it into one system. Here, we worked with mirrored environments that integrated into the Defence department's supplier systems, meaning users could continue working on legacy systems while being able to see the new environment at the same time.

Phase one is now complete and the team is currently in the process of moving into phase two, which involves facilitating the move away from the legacy system to the IDE. Once established as the master system, new functionality will be added such as additional product support.

Lastly, the data environment will be integrated with the nation's SAP system, which currently controls its frigate maintenance data. By allowing the two systems to work together seamlessly, the Defence department will be able to better manage the full lifecycle of the ships, from design to maintenance.

When each phase has been rolled out, the IDE will provide end-users with numerous capabilities in one place, from controlled information sharing and automated workflows, to reporting and data quality monitoring. This will give them the ability to better manage and make decisions related to the Navy frigates, in turn optimising the availability and cost efficiency of its most critical Defence assets.

Looking ahead, if the Defence department wanted to change a radar on a ship, for example, it will be able to make this happen through controlled data sharing and enhanced collaboration within the IDE between its different partners. In practice, the IDE will enable suppliers to share specific parts of their data related to the radar with the right people in the department, who can then implement next steps via a structured process with clear owners – including procuring the radar, fitting it and creating new maintenance documentation. This way, when the ship goes back out to sea with the new radar, people will know exactly what's on board and how to look after it, ensuring the ship is always mission-ready.



The results so far

While still early in its implementation process, the programme is already providing benefits to the NATO country's Defence department.

Due to the phased, collaborative approach, the first data consolidation phase has been delivered with clear focus, with early feedback pointing to improved data quality and accessibility. The team has successfully processed over 1.2 million data records, initially transferring these from the existing systems into the new IDE. This amounted to just short of a terabyte of data and comprised of:



300,000 documents and
650,000 linked digital files



3,000 systems with **26,000**
linked parts



40,000 design changes
conducted under **30** contracts

Since the initial data transfer, the team has run daily update loads from the existing system to the IDE, processing on average 150 documents per day with 200 linked digital files. Any changes made to the systems, parts, contracts and designs are also processed each day. Since the work began, the team has run roughly 90 daily jobs, meaning 14,000 document changes have been processed so far.

The programme has also delivered broader positive outcomes, with the method itself being reviewed by the national Armed Forces branches for reuse across its portfolio. The training delivered has also enabled the country's defence department to build its internal capabilities, such as its support services, which can be replicated across the wider portfolio.

In an increasingly dynamic and unpredictable world, it is imperative that your complex assets are always mission-ready. To learn more about our Intelligent Complex Asset Management Solutions for Defence organisations, visit: baesystems.com/prophesea

We are BAE Systems Digital Intelligence

Digital Intelligence is part of BAE Systems and employs over 4,800 digital, cyber and intelligence experts that collect, connect and understand complex data to help protect nations, businesses and citizens around the world from advanced threats. Our services, solutions and products span customers in central government and government enterprises, critical national infrastructure, law enforcement, military, national security, space and telecommunications.

 learn@baesystems.com

UK: +44 (0) 203 296 5900 | Americas: +1 877 277 22315 | Australia & NZ: +61 3 8623 4400 | Asia :+65 6714 2100

Copyright © BAE Systems plc 2023. All rights reserved.

BAE SYSTEMS, the BAE SYSTEMS Logo and the product names referenced herein are trademarks of BAE Systems plc.
BAE Systems Applied Intelligence Limited registered in England & Wales (No.1337451) with its registered office at Surrey Research Park, Guildford, England, GU2 7RQ.
No part of this document may be copied, reproduced, adapted or redistributed in any form or by any means without the express prior written consent of BAE Systems Applied Intelligence.