

Aerospace and defense

BAE Systems Military Air Solutions

Teamcenter supports aircraft through 50-year lifecycle

Product

Teamcenter

Business initiatives

Enterprise data management

Business challenges

Partnered-support business model requires through-life support and maintenance for 50+ years

Customers' demands for faster response and shorter cycle times

Budget pressure to manage initial PLM investment and ongoing costs

Keys to success

Upgrade from Enovia PM to a Teamcenter COTS deployment

Single source of product and process knowledge

Maintenance, repair and overhaul (MRO) solution, including logistics support

Shared vision with Siemens PLM Software

Results

Successfully repositioned as through-life support provider

PLM enables new business model – from customer requirements to after-sales maintenance

Advanced air capability

BAE Systems is a global company engaged in the development, delivery and support of advanced defense and aerospace systems in the air, on land and at sea. The third-largest global defense company, BAE Systems has major operations across five continents, with customers and partners in more than 100 countries. The company's Military Air Solutions (MAS) business

focuses on combat aircraft, jet trainers, reconnaissance aircraft and unmanned aerial vehicles, providing development, training, repair and maintenance for aircraft such as the Nimrod maritime reconnaissance and attack aircraft and the Typhoon combat fighter to name just a few.

With globally dispersed design teams and complex products being the nature of the business, MAS management has long recognized the need for product data management (PDM). Recently, however, as the company has evolved to an "Availability Service" business model, it found its



Results *(continued)*

Collapsed lead times; lower development costs

Tighter supplier integration; faster reviews and changes

Faster PLM implementation for new aircraft

Lower cost of ownership for PLM software and services

original PDM system, Enovia PM, lacking. "Our new business model requires BAE to support the in-service phase of the aircraft. Traditionally, that was undertaken by the Royal Air Force (RAF), and the RAF used to manage all the integration risks," says Graham Malley, PLM program manager, BAE Systems Military Air Solutions.

"Under the new business model, instead of just designing and delivering aircraft, MAS now provides configuration-driven, through-life maintenance, repair and operational support that starts when a product is delivered to the customer," says Diane Raymond, director of information management and technology, BAE Systems Military Air Solutions. "We needed a solution that would help us manage the entire lifecycle of the aircraft, which can be as long as 50 years. Through-life support was the key selection criterion for the new PLM system."

Through-life support calls for PLM

The change in the way BAE does business called for a change in its approach to data management. MAS required a true product lifecycle management (PLM) strategy to enable end-to-end product support.

"From a support perspective, most of the PDM systems out there are focused on the as-designed definition, and in some instances the as-planned, which is really how we build the product," says Bill



Woods, PLM design manager for the Nimrod and Typhoon deployments, BAE Systems Military Air Solutions.

To address its PLM strategy, MAS chose the Teamcenter® digital lifecycle management solution from Siemens PLM Software. Key capabilities for MAS are: Teamcenter maintenance, repair and overhaul solution, including logistics records management; reporting and business



"We were looking for a PLM solution that would support our new business model. Only Teamcenter offered the breadth and level of capability we were looking for."

Graham Malley
PLM Program Manager
BAE Systems Military Aircraft Solutions



"Typically engineering systems finish at the point at which we deliver product. Teamcenter is fundamental to be able to manage our aircraft and support phases of the lifecycle."

Diane Raymond
Director of Information
Management and Technology
BAE Systems Military Aircraft
Solutions

analytics; community collaboration and enterprise knowledge management.

Woods says, "From the support side of things, it seems to be an area that Siemens has focused on and has a lot more maturity than a number of the other vendors out there." Diane Raymond notes, "Teamcenter supports us in our move toward partnered support as we have to be able to maintain all of our engineering data throughout the lifecycle of our products. Typically engineering systems finish at the point at which we deliver product. Teamcenter is fundamental to be able to manage our aircraft and support phases of the lifecycle." Malley adds, "The whole idea of Teamcenter is that we can do the work that needs to be done smoothly from beginning to end. It's meant to support the full lifecycle of the aircraft."

One source, end-to-end

Teamcenter is now deployed in a number of areas across MAS, including the F35 and Unmanned Aerial Vehicle (UAV) programs, and is currently being deployed to the Nimrod MRA4 and Typhoon programs. It provides a single source of product and process knowledge, managing data from many different applications including the CATIA design files. "The design engineers, support engineers and service engineers all now have a single source of information," says Malley. "With Teamcenter, we bring all those data elements into one database that all the engineers are working with concurrently. This helps reduce

our lead times to meet the tighter schedules of our customers. It also improves the efficiency of our operations." Teamcenter manages bills of materials and aircraft configurations as well.

Teamcenter integration with the company's other legacy systems enables a level of communication between domains that wasn't possible previously. Now, for instance, a design change to a wing can flow automatically into the systems that drive manufacturing deliverables and technical publications.

Using Teamcenter, MAS has implemented an end-to-end PLM solution. Malley notes, "With Teamcenter, we are managing everything from when we get the customer requirements through to design, build and into support. This is all managed in a single database, in one application. That's what we see as a key strength of Teamcenter." He points out that having an end-to-end PLM solution supports the company's move into after-sales service. "Because we've got all the information in the one data set that provides a representation of the actual configuration of the aircraft in use, when a customer has a service issue, we can provide a quick response," Malley explains.

Collaboration support

MAS is finding that Teamcenter supports collaboration both internally and externally. "Teamcenter allows data to flow through the various engineering disciplines and in this way it significantly improves



"So often you can see people wanting to sell software and then they'll try and make it fit your business. That wasn't the way Siemens worked. In the early stages, Siemens worked with us to understand our business first and then sell software to meet our needs."

Diane Raymond
Director of Information Management and Technology
BAE Systems Military Aircraft Solutions

collaboration across the disciplines," Malley says. "Externally, because Teamcenter is a web-based application, it provides easy access from the customer and supplier point of view. We're currently using Teamcenter community collaboration functionality with our supplier base, and we are finding benefits there in terms of sharing information and drastically collapsing the lead time for passing information between the supplier and ourselves."

"The ability to interact online with suppliers gives us the ability to do real-time reviews and real-time changes," adds Woods. "Rather than waiting for the mail to be delivered and another week to get a response, we can accomplish these tasks in a day."

MAS benefits from Teamcenter in a number of important ways, according to Malley. "One of the benefits is collapsing lead times, and invariably when you collapse lead times, you save costs. Another is that we can be more responsive to the customer. This is critical because our customers must continuously adapt to new types of threats in combat situations, and it's our responsibility to provide the capability to counter those threats. With solutions and services from Siemens, we are better able to quickly deliver, and now also to maintain, the aircraft our customers rely on."



A lasting PLM solution

When it comes to supporting products with a lifespan of 50 years or more, MAS needed a PLM partner it could trust to be around as long as its aircraft. "There were a number of reasons why we chose Teamcenter," explains Diane Raymond. "Obviously, it met our technical requirements. It was also clear that in Siemens we found a partner who would work with us and support the software for as long as we need it."

Siddeek Adam, PLM project manager for BAE Systems Military Air Solutions, explains, "The relationship with Siemens is absolutely crucial. They really work with us like partners rather than suppliers. To support us, they have to understand what the real challenges are and what the real difficulties are. They understand that our success, BAE System's success, is Siemens PLM Software's success."

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The partnership with Siemens includes the hand-off of Teamcenter maintenance and support to MAS IT. "After the project is completed, BAE will be self-sufficient in the support of the application," says Malley. "On previous deployments, because of the complexity of the application, we've been very reliant on the vendor. The ability for BAE to support the application once the Siemens consultants have left will significantly reduce the through-life cost of supporting the application."

One of the keys to lowering the cost of ownership for MAS was finding a system that would not require a great deal of work on MAS's part to implement. "One of the things we looked for early in the selection process was a system we didn't have to heavily customize," notes Diane Raymond. Teamcenter has proven its suitability in that arena, being deployed in as few as 12 weeks on the new Unmanned Aerial Vehicle program. In the past, that process took as long as 18 months to two years, according to Diane Raymond.



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