WRAM Online

U.K. Ministry of Defence's new IT system reduces administrative burden and frees soldiers' time for maintenance work.

By Bill Burchell

The first battlefield-deployable, fully networked aircraft maintenance management system was formally handed over to the U.K. Ministry of Defence (MoD) in April — on time and under budget.

WRAM Online, developed by MIRO Technologies, was accepted into service by Major Gen. Malcolm Wood, Director General Joint Supply Chain, on behalf of the Royal Navy Fleet Air Arm, British Army Aviation and the Royal Air Force at a reception at the Museum of Army Flying in Stockbridge, Hampshire.

Although the handover enabled those involved to be thanked, Wood said the successful delivery of the system, achieved against demanding timescales, had enabled the convergence of all Army and Navy aircraft engineering and asset management activity into a single, fully deployable system. Moreover, British forces on front-line duty already are benefiting from the system, which now is in use on the Apache attack helicopter fleet just 10 months after the contract for the system was awarded.

The initial application of MIRO's Work Recording and Asset Management system (WRAM) was rolled out to the Royal Navy's Fleet Air Arm in December 1993 and, after upgrades in 2004 and 2006, enables some 550 helicopters and more than 360,000 rotable components to be managed for the Royal Navy and Army (plus the RAF soon).

The new generation application, WRAM Online, features new and more intuitive screens and menus intended to reduce training and

Royal Navy

Major General Malcolm D. Wood, CBE, receives WRAM Online from Vince Monteparte, president and CEO of MIRO Technologies.

establish closer integration with OEMs' heavy maintenance areas. A key function is its ability to work independently in remote locations while utilizing available communications networks (including e-mail) to resynchronize stored information with the central master database.

The new application also acts as three systems in one:

- As a management information system, it provides total visibility of all tracked assets, such as time to overhaul, failure trends, status, geographical location, demand and supply profiles and asset histories;
- As a logistics tool, it can monitor equipment performance and life-cycle costing as well as equipment support and maintenance policies. It also provides essential data to OEM support systems and thereby enables these companies to deliver in-depth support;
- As a maintenance management tool, it assists airworthiness decisions and provides a near paperless working environment.

On the Front Line

The benefits the new networked system should bring to the battlefield were graphically explained by Maj. Stuart Myers, (7 Regiment, Army Air Corps), who recently returned from front-line duty in Afghanistan, supporting British Army Apache helicopters.

The local environment in Afghanistan's Helmand and Kandahar provinces, he said, is semi-desert punctuated with fertile river valleys. But the biggest problem for aircraft operations are the fine, talcum-powder dust that blows about constantly, covering everything it touches. This includes the rotable spares around the aircraft and the inner workings of electronic systems.

The dust could also have affect the helicopter engines," he said, "but thanks to excellent filter systems, 99.99 percent of the dust particles were removed from their air-intakes. We also employed a program of washing and drying the rotables before they were installed, so in theatre, the aircraft were more robust than in the U.K."

The ever-present dust also affects laptop computers. Kept inside they might last three months, while outside, they would barely last a week. Added to this, are very strong winds and summer temperatures that reach 50° C, making working conditions exceptionally difficult for the maintenance technicians.

"My job was to provide the helicopters to fly operations," said Myers. "There were three types of operations: routine, pre-planned and TICs, or troops in contact (with the enemy). So the operations people gave us their plan and we would tell them what we could provide.

"For pre-planned ops, we tried to rotate the aircraft to ensure a core number was always available. For example, those with 10 flight-hours available would fly first, then those with 20 hours, 30 hours and so on — thereby keeping a reserve. At the same time, routine operations would need to be flown, such as top cover for ground forces, med-evacs and quick response teams, etc.," said Myers.

In practice, he said some 50 percent of flying hours were for TIC operations, making maintenance planning difficult. This was mainly because of the stand-alone legacy system, which had no links to update information. Instead, he had to call around to various locations to find out the status of aircraft.

"Very often I'd discover only three or four aircraft were available instead of the six I expected," Myers said. "So I'd then have to spend more time considering what could be done to accommodate the day's operations, and then get clearance to do it — essentially, 'go' or 'no go' decisions," he said.

Given these decisions, Myers had to compile two 10-minute briefings per day to brief the ops planners, but the technical data required, such as current defects and limitations etc., took four men four hours to get the information from the system and put into a spread-sheet. Moreover, without expert knowledge of the system, it wouldn't be possible to find what was wanted.

Additionally, when aircraft were deployed in other areas, all their technical data would be stored on a laptop that accompanied them, and sometimes it could be 14 days before those aircraft returned and their data downloaded. So keeping track of their status required a dedicated help-desk to correlate reports, which was very admin-intensive.

By contrast, a fully networked, Web-based system like WRAM Online, Myers said, could provide instant access to current data, including the fault limitations and defects on each aircraft, and present the information in a user-friendly and usable format. As a result, it would reduce the administrative burden and free four men per-day from information gathering and allow them to be where they should be — supervising aircraft maintenance.

Indeed, the configuration management and asset status board would allow the commander to know the location, serviceability and primary role configuration of his aircraft. Technicians could see life-limited components with time before removal. They could check the modification standard of components fitted and see acceptable alternatives to be installed. Most importantly, they could send and receive information very quickly, which was vital in remote locations.

Looking ahead, MIRO Technologies has plans to further enhance the system with fatigue indexing, an interface to health and usage monitoring systems (HUMS), electronic sign-off, links to maintenance manuals and support for the new RFID initiative. w

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