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Fleet Management in Defense

WHITE PAPER

FLEET MANAGEMENT IN DEFENSE

Foreword

Within a military context the management of the whole fleet is the enabler of defense equipment maintenance, and the solution to cost effective long-term military capability. To manage this in an optimized and holistic way generates a number of organizational challenges—involving: information systems, culture, prescribed practices and human interactions at all levels.

Traditionally, military units have 'owned' the main fleet assets assigned to them, and as such have retained and stored all of their equipment, in order that they are able to maintain and train on it as they like; wherever and whenever that formation is required.

But Land units, as opposed to Air or Maritime, typically form and reform according to a particular operational role, exercise or unit training task. With fleet assets assigned to an individual unit this process of cycling through training and operations and forming and reforming typically leads to a sub-optimal use of those expensive fleet assets.

Furthermore modern military forces are now being deployed on operations with extended and complex supply chains—driving the need for more efficient fleet management processes and capabilities. These deployed locations and their associated supply chains often require many months of pre-preparation in order to prime effectively—to reduce conflicts, risk, and optimize operational costs.

Finally, any perceived management inefficiency is amplified where asset maintenance also needs to be factored into a highly mobile and global fleet. This is further complicated as fleet assets have gradually become more complex with the addition of electronic defensive and communication systems, and compatibility issues between differing versions of similar assets.

Why Manage as a Fleet?

A UK Government commissioned study in 2001 identified that the MOD had:

- poor visibility of: Land equipment configuration, locations, ownership, usage, maintenance, reliability and availability;
- inefficient maintenance techniques and procedures, which did not implement Reliability-centred Maintenance (RCM) well and involved little data analysis—Defect Reporting and Corrective Action System (DRACAS);
- few effective logistic support partnerships with Industry.

The report recommended: "Fleet Management (FM) and Engineering & Asset Management (E&AM) as key areas for improvement and rationalization across the Defence Logistics organizations and into the Front-Line Commands."

In addition, the move away from a state of high readiness in the face of the Cold War threat to a graduated readiness and expeditionary warfare prompted a re-assessment of the allocation of Land equipment in peacetime. In particular this re-assessment involved the distribution of fighting and logistic vehicles. During the Cold War, Army Regiments would typically be provided with all of the equipment they would need to deploy or train. However, new land equipment was subsequently procured in increasingly reduced numbers for affordability reasons but also there was a realization that there was so much waste and unaccounted loss; brought about by the historical abundance of supply (the 'free' to the end-user has 'no value' syndrome). The same was true of technical upgrades to existing equipment.

Brigadier Chris Murray, Director Royal Logistics Corps recently made the point[1] that for the British deployment in the Afghan Helmand Province there is a 5000 km air bridge, where it costs 45 times more to fly equipment than to send it by sea. By sea and land, even if everything went well, then it is still a 35 to 40 day process to get assets to the Afghanistan bases. As such, it is operationally critical to pre-plan on a fleet basis what will be used and deployed including spare parts and consumables. And there is currently no real contingencies built into the plans to take into account the impact of the weather or enemy actions!

Brigadier Murray subsequently went on to say in the same article that "There is only one thing that will revolutionise British Military logistics. It isn't airships, it isn't spaceships: it's the application of commercial Information Technology (IT) systems that allow the rapid sharing of data. With good logistics IT, you get better logistics decision making. Commanders can then calculate military risk better……"

Major Gen Mike Huntley (retired), who was previously Director General Logistics Land for the UK MOD and is now Head of Logistics for EDS Defence—in his overview of 'Defence Support Priorities' at the IFS Berlin World Conference—leaned upon his

[1] Military Logistics International Vol4 Iss2 dated Sep/Oct 2008.

experiences from Northern Ireland, Bosnia and Kosovo operations as well as the 1st and 2nd Gulf Wars and more recently the preparation and mounting of the Afghanistan operation. Here he highlighted command priorities with support to current operations being number one; and training the replacement forces that will next rotate onto operations being number 2. However, of note, was that these were closely followed by:

- coordination of forces and fleets for normal training;
- need to provide accurate finance and cost analysis information to underpin exercises;
- Operations—plans and the ability to capture, look forward and plan for the future.

Like Brigadier Murray he also identified the need for modern, commercial but flexible Information Systems (IS) as key to military capability.

The Whole Fleet Approach

Because of these drivers, in the UK the concept of Whole Fleet Management (WFM) was devised as a way of meeting all operational and training commitments with a reduced fleet and reduced equipment.

It was proposed that the practice of issuing units and formations with their full establishment of vehicles would cease and instead, units would hold a reduced fleet of vehicles sufficient only for low level collective training. The plan was that their holdings would be augmented from a central pool for higher level training and operations. This process has the potential to improve availability, reduce maintenance costs and allocate diminished resources at the right time, in the right place and in the correct configuration.

The operational benefits and efficiency of the WFM concept are such that the UK MOD proposes to extend it to all ground based equipment and vehicles across Defence. As such, the benefits are that there will be a reduction in the number of vehicles procured, which will result in a smaller Total Fleet Requirement (TFR). Quite simply, without WFM the UK MOD will not be able to meet future operational and training requirements.

The Management Information System Requirement

FM within expeditionary warfare, invariably demands short planning times, so to plan for future operations Commanders need precise and timely information on units, formations and fleets, including:

- where their equipment is;
- what is the state of repair of each asset;
- how is each piece of equipment configured;
- when will each piece of equipment be ready for use.

In addition, three critical processes are needed to support a typical requirement for a Commander to deploy:

- planning of vehicle requirements against operational and training plans and cascade of plans down the chain of command;
- allocation of vehicles to meet plans, tasking and recording of usage information on task completion;
- production of reports to support decision making;

and, specifically a Fleet orientated Management Information System (MIS) needs to supports these planning requirements as follows:

- forward planning at the highest level of operational command for operations and training, founded on directed training plans and any other ad hoc plans;
- at the logistic HQs—enable the review of all the plans to understand usage and sustainment levels of stocks required;
- enable formation staffs by reviewing plans to be able to identify any conflicts and resolve as appropriate;
- enable units to be able to identify vehicles by variant, model and quantity;
- enable the Unit Fleet Manager (UFM) to compare planned requirements against vehicle holdings and assess spares needs;
- when the equipment demands are satisfied, units and sub-units can allocate crews to vehicles;
- UFM's can check vehicle usage and manage consequent programming of inspection and/or maintenance.

As such, the Key features of such Fleet Management MIS should be:

- **Simplicity**—infrequent users and personnel changes mean the system must be simple to use with minimal training;
- **Usability**—the system must be easy to understand by users and configured to suit their roles;
- **Graphical Planning**—an easy to use graphical representation of the vehicle allocation, current status and planned future events;
- **Future-proofing**—Legacy Information Systems must be easily integrated with the new MIS and the new integrated system must be adaptable to new technologies as they become mature.

JAMES—A Solution

The Joint Asset Management and Engineering Solutions (JAMES) program is the UK MOD enabler towards creating the means by which future fleet based planning and control of assets can be directed. This provides a WFM solution that will operate at all levels—strategic, operational and tactical. IFS Defence provides the foundation software product, by utilizing components from IFS Applications™ (a Commercial off-the Shelf {COTS} solution), upon which JAMES is based—the service delivery of which is provided by Lockheed Martin who are the Systems Integrator (SI) to the UK MOD.

At the strategic level, JAMES will provide real-time global visibility and provide Defence Equipment and Support (DE&S) with the information necessary to become an Intelligent Customer in the management of existing contractual and future equipment support solutions. Real estate will be identified for the provision of additional storage sites, the Investment Appraisal Board (IAB) will determine whether an industry or in-house provider has a greater role to play in WFM and management processes will be developed to ensure maximum utilization and optimization of reduced fleets.

At the operational level JAMES will provide global and real-time data that will inform the management process and facilitate essential forward planning for the allocation of equipment to meet all commitments.

At the tactical level, there will be an increased need to store vehicles and equipment within Controlled Humidity Environments (CHE) requiring increased storage capacity. An inspection and accounting process will be delivered to maintain vehicles within the stored fleet. JAMES in addition to providing a system to manage the vehicles and equipment in CHE will also provide a deployable system for global visibility of assets.

Delivered in Phases, Interim WFM, supported by the JAMES 1 solution, saw the introduction of the first step towards the overall goal of delivering more capability while at the same time making savings in the overall management of the Armed Forces' equipment.

The **JAMES 2 (Land)** project followed on from the previously implemented JAMES 1 solution which is currently in use by 9,000 users in the regular UK Army, providing a MIS to enable optimized asset usage with minimal fleet sizes. IFS Applications supports the UK Army with asset information related to identification, configuration and maintenance requirements as well as current usage and asset owner.

JAMES 2 deepens and widens the functionality of the James 1 solution by adding additional IFS Applications components handling processes involved in engineering, asset data collection and analysis as well as workshop management for the maintenance, repair, modification and overhaul of assets. The solution will also improve mobility and be extended to include ground-based equipment used by the Royal Navy and Royal Air Force (the Tri-Service phase). The goal is to improve availability, enhance operational and training effectiveness, and reduce equipment support costs. The roll out of JAMES 2, which is based on IFS Applications 7, is scheduled to commence in 2010.

Benefits

Fleet Management is the first step towards delivering the benefits of engineering and effective asset management for the military. Once all equipment is identified and is being managed coherently, true maintenance, repair and overhaul (MRO) management capability can be introduced—delivering real savings by the efficient management of spares, consumables and the more effective use of assets through life. Co-ordination of engineering specifications from conceptual design, through as-built and as-maintained provides maintenance crews with up-to-date specifications and the confidence to know that each asset is being maintained according to the original equipment manufacturers (OEM) latest standards and revisions. Confidence to ensure that all serial tracked assets are accounted for, are fit for purpose, have documented and well understood exchange procedures, and are managed with agreed inventory budgets—is the cornerstone of good FM.

In today's more regulated world, FM also enables assets to be disposed of at the end of their useful life, safely, and in a planned, controlled and organized manner—coordinating deliveries of their replacements if appropriate.

Overall, the benefits to the Commander are through the visibility and, hence, control a Fleet Management MIS solution provides. To his staff, the benefits are manifest through confidence in the information presented, its timeliness and accuracy. The benefit to the budget holder—and ultimately, the taxpayer—is the savings realized through the reduced logistic footprint.

For more than 10 years, IFS has delivered value-adding business solutions to customers in the **Aerospace & Defense** sector. Our product development is driven to meet the rigorous demands of this changing market, delivering an agile product to keep our customers ahead. Our focus is to enhance your operational capability—helping you to manage change, reduce costs and improve customer service.

We are able to deliver a comprehensive and unique business solution covering the complete lifecycle from: conceptual design, through manufacture, in-service maintenance repair and overhaul, and into retirement and disposal. Our product enables seamless co-existence with your existing systems and environments within complex and geographically dispersed user networks. Our people offer a wealth of **Aerospace & Defense** experience, and our products underpin the most challenging programmes in the **Aerospace & Defense** sector.

IFS offers the **Aerospace & Defense** industry a unique, evolutionary and agile approach to meeting the transformation challenge. By offering flexibility in a single product and a step-by-step approach to implementation we enable our customers to reduce risk and achieve class-leading business solutions with lower Total Cost of Ownership.

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