

Mitigating Diminishing Manufacturing Sources & Material Shortages

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While Diminishing Manufacturing Sources and Material Shortages (DMSMS) are a fact of life, the key to effective mitigation is long-term, proactive planning by the Program Manager (PM). According to the Office of the Secretary of Defense publication *Performance Based Logistics: A Program Manager's Product Support Guide*, "material obsolescence may occur at the part, module, component, equipment, or other system indenture level. DMSMS obsolescence can occur in any program phase and can severely impact the program schedule, system availability, capability or cost. The PM must insure that performance based logistics product support efforts include an active DMSMS process to anticipate occurrences and take appropriate actions."

Under total life cycle systems management, the PM must balance traditional acquisition responsibilities for cost, schedule, and performance with life cycle support and sustainment (including DMSMS planning and management). PM's make scarce resource allocation decisions knowing the choice may come down to fielding a less supportable (less reliable) system or pursuing a more sustainable (more reliable) program. The dynamic tension is often acute, and unfortunately, DMSMS planning and funding are not always given the highest priority.

Simply supporting the system is a substantial undertaking, let alone planning for manufacturers of components and parts who may (will) eventually exit the market. So what's a proactive PM to do? Fortunately, there are ample resources and organizations available to assist.

A RANGE OF PROACTIVE SOLUTIONS

If DMSMS and obsolescence are the problem, technology insertion, continuous modernization, open systems architecture, redesign, modifications, Performance Based Logistics (PBL), public-private partnerships, commodity councils, evolutionary acquisition, spiral development, and emulation are all tools to help the PM, the life cycle logistician,

and/or the DMSMS manager ensure the continued supportability and sustainability of the system.

Possible methods are early identification through shared databases, inter-Service and inter-agency cooperation, and contractor participation; use of predictive tools; life of type buys; aggressive material improvement program and deficiency reporting programs; use of engineering change proposals (ECP's) and value engineering change proposals (VECP's) to upgrade and modernize components while maintaining interchangeability and F3 (form, fit, function); specialty manufacturers; reverse engineering; data rights; and drawing availability.

LEADERSHIP

Along with up-front funding and commitment at the PM level, senior-level commitment, policy, tools, education, planning, and cross-functional collaboration are vital. The Navy, for example, plans to require a formal DMSMS plan for all cognizant ACAT programs other than those slated for retirement prior to January 2007, as well as evaluation of DMSMS as part of their independent logistics assessment process.

OPEN SYSTEMS DESIGN

According to OSD's *Performance Based Logistics: A Program Manager's Product Support Guide*, "open systems design can help mitigate risks associated with technology obsolescence, avoiding being locked into proprietary technology or relying on a single source of supply over the life of a system . . . Spiral development also helps to alleviate obsolescence concerns. However, the PM must insure that PBL product support efforts include an active DMSMS process to anticipate occurrences and take appropriate actions. This can often be carried out by the Product Support Integrator."

TEAMWORK AND COOPERATION

Cooperation between the government program office and original equipment

manufacturer (OEM) is essential well before the Milestone C decision and entry into low-rate initial production, including development and integration of an up-front DMSMS-mitigation strategy in the system's PBL strategy. The PBL product support integrator should focus on and plan for reliability improvements, continuous modernization, and DMSMS planning for the duration of the product life cycle.

BILLS OF MATERIAL AND PARTS LISTS

These documents are critical components of effective DMSMS management and should be part of doing business under PBL, whether delivered by the OEM to the government or made available in a shared data environment.

CONTINUOUS MODERNIZATION

By this process, state-of-the-art technologies are inserted continuously into weapon systems to increase reliability, lower sustainment costs, and increase the warfighting capability to meet evolving customer requirements throughout an indefinite service life.

According to the Defense Acquisition University PBL course, there are three additional obsolescence mitigation strategies to employ as part of an overarching continuous modernization approach: Engineering Change Proposals, Value Engineering and PBL. The PBL contractor ensures that all elements of logistics support are available to provide an agreed-upon level of system availability on demand."

The DOD Program Managers Handbook—*Common Practices to Mitigate the Risk of Obsolescence*, available at http://www.dmea.osd.mil/docs/pmhandbook_rev_d.pdf, identifies three levels of practices to mitigate DMSMS:

- **Level 1 Practices** to resolve current obsolete items (some may be considered reactive), include among others:
 - Assign DMSMS focal point
 - Conduct DMSMS awareness briefings

- Facilitate internal communication
 - Facilitate external communication
 - Implement comprehensive DMSMS plan
 - Create supportability checklist.
- **Level 2 Practices** to mitigate the risk of future obsolete items (majority would be perceived as proactive) include among others:
 - Conduct DMSMS awareness training
 - Perform DMSMS prediction
 - Implement DMSMS internal steering group
 - Build commercial off-the-shelf list
 - Develop DMSMS solution database
 - **Level 3 Practices** to mitigate the risk of obsolescence when there is a high opportunity to enhance supportability or reduce total cost of ownership (proactive activities which may require additional program funding) include among others:
 - Implement circuit design guidelines
 - Produce behavioral VHDL [very high-speed integrated circuit hardware description language] model
- Conduct technology assessment
 - Implement electronic data interchange
 - Investigate technology insertion. Also referred to as technology transition, this is the process of applying critical technology in military systems to provide an effective weapon and support system—in the quantity and quality needed by the warfighter to carry out assigned missions and at the best value.

DMSMS CENTER OF EXCELLENCE LEADS THE WAY

The Defense Supply Center, Columbus (DSCC) serves as the DLA focal point for DMSMS management and is responsible for the DOD DMSMS Center of Excellence, developed to encourage communication, education, and cooperation among interested and affected agencies. Visit the DMSMS web site (www.dmsms.org) for resources and tools to assist proactive PM's and logisticians. *DTJ*

In addition, the Government-Industry Data Exchange Program, also known as GIDEP, is a cooperative activity between government and industry participants seeking to reduce or eliminate expenditures of resources by sharing technical information essential during research, design, development, production and operational phases of the life cycle of systems, facilities and equipment. GIDEP works closely with different government activities on several DMSMS projects that will eventually be migrated to GIDEP system. Among these projects are: the DMS Shared Data Warehouse, the DMSMS Prediction Tool, and the Army DMS Info System. Future migration of these systems in GIDEP would facilitate GIDEP's role as the central repository of data for DOD DMSMS management.

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