Basic Proactive DMSMS Management with Anti-Counterfeiting Considerations

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DSCC DMSMS Office
Basic Proactive DMSMS Management with Anti-Counterfeiting Considerations
Workshop Overview

• DMSMS - What’s That?
• Helpful Information
• Introductions
• Workshop Topics
• Importance of DMSMS
• Criteria for Success
• General History
• DMSMS and You
Helpful Information

- About the Instructor
- Contact Information
- Web and Email
- Messages
- Additional Information
About You

• Name

• Current Assignment
  Program
  Military Installation

• Experience or Background
  Civil Servant
  Military
  Contractor
Topics to Discuss

• Management Buy-in

• Teams, Tools, & Training

• Data and the BOM

• Financial Resources

• SD-22 DoD DMSMS Guidebook
Importance of DMSMS

• **DMSMS is important because:**

  If it isn’t managed, it will overwhelm you with expensive problems

  It Impacts warfighting and readiness capability

  It’s Not just electronics are affected but all components of a system

• **The Program Manager is the first line of defense**
What is it?

• DMSMS is:
  “…loss or impending loss of manufacturers … or suppliers of items that endanger a weapon system's … support capability.”

• The DoD Requirement:
  “DoD Components shall proactively take … actions to identify and minimize the DMSMS impact on weapon system’s … logistics support efforts.”

• DMSMS and Obsolescence are terms used interchangeably even though there is “technically” a difference.

Source: DOD 4140.1-R
• DMSMS problems occur mainly with electronic components, but DMSMS affects all material categories

• DMSMS can occur in any phase of a program’s life cycle

• Not limited to weapons systems

• Extends to all products that could jeopardize military readiness
For Discussion Purposes

Boxes and Boards:

• **Boxes:**
  - Navy uses Weapons Replaceable Assembly (WRA)
  - Air Force uses Line Replaceable Units (LRU)

• **Boards (Circuit Card Assemblies - CCAs):**
  - Navy uses Shop Replaceable Assembly (SRA)
  - Air Force uses Shop Replaceable Units (SRU)
Some Issues

• **Current DMSMS Impediments**

  Lack of experience or trained DMSMS personnel and support

  Not enough human resources to assign to all DMSMS duties

  Lack of indentured Bills-of-Materials (BOMs)

**Never enough money for investments:**

• Teams
• Tools
• Analysis
• Solutions
Common Myths:

• There is an “expert person or organization” that knows everything about DMSMS.

• Buy my tool, it solves all of your problems.

• There is a single solution for a DMSMS issue.
# DoD DMSMS Organization

<table>
<thead>
<tr>
<th>OSD Leadership</th>
<th>Working Group Committee Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Director, Systems Engineering Directorate</td>
<td>Outreach</td>
</tr>
<tr>
<td>Director, Mission Assurance Division</td>
<td>Common Use Tools</td>
</tr>
<tr>
<td>Director, DSPO</td>
<td>Conference</td>
</tr>
<tr>
<td>Program Manager, DMSMS</td>
<td>Foreign Military Sales Data</td>
</tr>
</tbody>
</table>

## Working Group Membership

- OSD
- Army
- Marine Corps
- Navy
- Air Force
- DLA
- MDA

## Advisory Members

- DMEA
- GIDEP
- DAU
- DCMA

## Associate Members

- DoC
- FAA
- NASA
- USCG
- USCG
- DoE
- AIA

## Industry Liaison
DoD DMSMS Program Objectives

- Define a **proactive DMSMS management process** that a PM can use to build an effective DMSMS program.

- Define DMSMS support **metrics to measure the effectiveness** of a proactive DMSMS program.

- Promote **cost-effective supply chain management integrity** through DMSMS problem solution at the lowest (cost, time, functional) level.

- Promote the exercise of **best practices** throughout the DMSMS management cycle.
DLA DMSMS Partners

- Support All US Services and Federal Agencies
- Government and Industry Data Exchange Program (GIDEP)
- DoD DMSMS Working Group
- Interoperability efforts with the UK Defence Logistics Organization (DLO) and the Component Obsolescence Group (COG)
- NATO Maintenance and Supply Activity (NAMSA)
Proactive DMSMS Management

• **Keys to success**
  – Management “buy-in” or commitment
  – Program centered around a team, tools, & training
  – Bill-of-Material (BOM)
  – Financial resources
Management Buy-In
Overview

- Introduction, and Background
- Documents and Intensity Levels
- Standard System Life Cycle
- Legacy Systems
- Importance of Being Proactive
Introduction

• **What is Management Buy-in?**

• **Empowering your subordinates**
  - Listening to their concerns or ideas
  - Empower them by “blessing” their plans
  - Otherwise generally support your subordinates

If your boss doesn’t support you in the same manner, then it’s likely you won’t be as efficient as you, and he or she would like!
If you don’t believe in the way a subordinate PM is setting up his or her DMSMS program, you’re not likely to support it!

Two primary reasons to interact and support your subordinates:

You and your team’s efforts directly affect the warfighter

You are a public servant and are spending the taxpayer’s money
DOD DMSMS Publications

- Defense Acquisition Guidebook (DAG)
- DOD DMSMS Guidebook (SD-22)
• SD-22 DoD DMSMS Guidebook
  – “Official” DOD guide for performing proactive DMSMS
  – Supersedes many old DMSMS reference documents
OSD Intensity Levels
(Success Measures)

• Level 1—practices (largely reactive) sufficient to resolve known obsolescence problems

• Level 2—practices (more proactive) sufficient to mitigate the risk of future obsolete items

• Level 3—proactive practices sufficient to mitigate the risk of obsolescence when there is a high-probability opportunity to enhance supportability or reduce TOC (these proactive activities may require additional program funding)

• Level 4—proactive practices implemented during the conceptual design of a new system and continued through its production and fielding.
# Intensity Level Criteria

<table>
<thead>
<tr>
<th>Intensity Level 1</th>
<th>Intensity Level 2</th>
<th>Intensity Level 3</th>
<th>Intensity Level 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMSMS program established and funded</td>
<td>All Level 1 practices implemented</td>
<td>All Level 2 practices implemented</td>
<td>All Level 3 practices implemented</td>
</tr>
<tr>
<td>DMT formed</td>
<td>BOM processed through a predictive tool</td>
<td>DMSMS life-cycle costs and cost avoidance estimates developed</td>
<td>Technology road mapping used</td>
</tr>
<tr>
<td>DMT trained in</td>
<td>Results of predictive tool output analyzed</td>
<td>DMT trained in</td>
<td>System upgrades planned</td>
</tr>
<tr>
<td>+ DMSMS fundamentals and</td>
<td></td>
<td>+ DMSMS essentials,</td>
<td></td>
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<tr>
<td>+ DMSMS for executives</td>
<td></td>
<td>+ DMSMS case studies,</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>and</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>+ advanced DMSMS</td>
<td></td>
</tr>
<tr>
<td>DMSMS program plan written and approved</td>
<td>DMSMS solution database established</td>
<td></td>
<td>Technology transparency attained</td>
</tr>
<tr>
<td>Complete BOM developed with periodic reviews planned to keep it current</td>
<td>Budget established to fund future obsolescence solutions</td>
<td>Funding shortfall and impact identified and communicated to decision makers</td>
<td>Accessibility realized for alternate source development (VHDL, emulation, MEPs)</td>
</tr>
<tr>
<td>Solutions to near-term obsolescence problems implemented</td>
<td>Website established</td>
<td>For legacy systems, DMSMS tasking and data requirements included in applicable contracts</td>
<td></td>
</tr>
<tr>
<td>For new acquisitions, DMSMS tasking and data byproducts inserted in the development, production, or support contracts</td>
<td>Method established to prioritize LRU/WRAs for DMSMS risk</td>
<td>Circuit design guidelines established</td>
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</table>
Total Life Cycle System Management (TLCSM)

- The goal is to achieve the best performance and readiness, while reducing the overall operations and support costs.

- Performance-based Logistics (PBL) is the preferred DOD strategy.
  
  Entails buying a support package to support the system for its life cycle.

  The idea behind this strategy is standardization of common policies, procedures, tools, and terms.

  Lack of standardization is causing a very fragmented approach to DMSMS management, with inconsistent outcomes.

  Identify and standardize on the “best practice” methods and policies.
The Standard System Lifecycle

• To better understand DMSMS we need to look at the Standard System Life Cycle

• DMSMS can occur in any stage of the Standard System Life Cycle

• So what kinds of issues should you consider for managing DMSMS in the Standard System Life Cycle?
### Resolution Alternatives by Life Cycle Phase

<table>
<thead>
<tr>
<th>Resolution</th>
<th>Pre-Systems Acquisition</th>
<th>Systems Acquisition</th>
<th>Sustainment</th>
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</thead>
<tbody>
<tr>
<td>Open Systems Architecture</td>
<td>X</td>
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<td></td>
</tr>
<tr>
<td>Modification or Redesign</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Redefined Requirement</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Commercial Item Substitution</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Modernization Through Spares</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Design Techniques</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breakout</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Bridge Buy</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Life-Of-Type Buy</td>
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<td>X</td>
<td></td>
</tr>
<tr>
<td>Contractor Requirement or Availability Guarantee</td>
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<td>X</td>
<td></td>
</tr>
<tr>
<td>Existing Stock</td>
<td></td>
<td>X</td>
<td></td>
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<tr>
<td>Alternate Source</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Existing Substitute</td>
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<td>X</td>
<td></td>
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<tr>
<td>After-Market Vendor</td>
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<td>X</td>
<td></td>
</tr>
<tr>
<td>Emulation</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Government/Organic Substitution</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Fabrication Facility</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Redesign (Major &amp; Minor)</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Reclamation</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Technical Refresh</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Use Early Warning Databases</td>
<td></td>
<td>X</td>
<td></td>
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<tr>
<td>VHDL</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Early-Life-Cycle Parts Procurement</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
Legacy Systems

Your system sustainment phase can always be extended, and you may now be required to keep your systems operational longer.

So what do you, the manager, do?
Potential DMSMS Supporting Resources

- The DMSMS Management Team (DMT)
- The DMT Plan
- A Tool Chest

- Analysis Techniques - used to monitor the cost of a proactive program and the entire system for many factors such as operational readiness, phased maintenance, etc…

- Determine Possible Solutions - Treat each redesign as a new system acquisition
Importance of Being Proactive

- DMSMS Program Managers must be proactive
- Active risk management plan
- Don’t sit back and wait for things to happen
- Use a variety of different methods to combat DMSMS
Summary

- Introduction, and Background
- Pubs and Intensity Levels
- Standard System Life Cycle
- Legacy Systems
- Importance of Being Proactive
Teams, Tools, & Training
Overview

- DMSMS Teams
- Statistics and Metrics
- DMSMS Tools
- DMSMS Training
- Standardizing Teams, Tools, & Training
Introduction

• Where does one start when managing the DMSMS problem?

• What are the elements to a successful DMSMS management program?

• The size of your program depends on management buy-in and available, allocated resources.

• What Resources?
  A functional DMSMS team
  The proper tools
  Relevant training
DMSMS Management is a Team Activity

- Lack of experienced or trained DMSMS personnel is always a concern
- There is no single tool that will solve DMSMS; Your most important assets is your team of professionals
The Team

• Team should cover all disciplines

• DMSMS Management Team (DMT)
  
  Logistics
  
  Engineering
  
  Technicians
  
  Support staff member
  
  Etc.
DASNL Guidance

  - Incorporated into all USN and USMC ILA documentation
  - Provided outline of what should be included
  - Included in the development of the DMSMS Plan Builder Tool

MEMORANDUM FOR DISTRIBUTION

Subj: Diminishing Manufacturing Sources and Material Shortages (DMSMS) Program Management Plans and Metrics
Ref: (a) AD(NHB) Memorandum, DMSMS Management Guidance, 27 Jan 05

This memorandum amplifies reference (a) requiring Diminishing Manufacturing Sources and Material Shortages (DMSMS) management plans and metrics reporting for all cognizant Acquisition Category (ACAT) programs. The plans and metrics will improve your awareness, attention and actions to address this multi-million dollar problem. This process will provide the Department of the Navy important data to help refine DMSMS strategies, budget, and controls and reduce Total Life Cycle System Management costs.

Attachment (1) provides guidance for developing DMSMS management plans and delineates the minimum information required for all levels of leadership to properly manage DMSMS. Appendix B of attachment (1) identifies DMSMS metrics and provides a format for reporting. Metrics will be collected periodically to determine trends. Programs that active prior to January 2007 are not required to provide DMSMS management plans or metrics.

Please submit DMSMS management plans and metrics by 30 August 2005 to DASM Logistics via your Systems Command’s representative (if applicable).

Nicholas Kumar
Deputy Assistant Secretary of the Navy (Logistics)

Attachment
(1) DMSMS Management Plan Guidance

Diminishing Manufacturing Sources and Material Shortages Management Plan Guidance

Published by the Office of the Assistant Secretary of the Navy (Research, Development & Acquisition) - Logistics

April 2005
Tool automates development of a proactive DMSMS Management Plan

Answer questions tailored to your Service

Tool produces a Word® document with standard plan elements as outlined by DOD Working Group

You perform final editing to produce tailored, ready-to-use plan
Statistics & Metrics

• Metric
  Compares an output to a standard or a goal

• Statistic
  Presents data without comparison

Both are of interest to senior leadership and DMT
## Examples of Typical Performance Measures for a Proactive DMSMS Program

<table>
<thead>
<tr>
<th>Type</th>
<th>Source</th>
<th>Measure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statistic</td>
<td>Predictive Tool</td>
<td>Platform Health Picture</td>
<td>Monthly count of piece parts across the entire platform by DMSMS color code</td>
</tr>
<tr>
<td></td>
<td></td>
<td>System Health Picture</td>
<td>Monthly count of parts, SRUs, LRUs, WRAs, and SRAs by color code in each system</td>
</tr>
<tr>
<td></td>
<td>DMT DB</td>
<td>PR Generation</td>
<td>Cumulative generation of PRs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LRU Assessment Report Generation</td>
<td>Cumulative generation of LARs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PR Age &amp; Location</td>
<td>Count of PRs at various DMT locations showing age of PRs at each location</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PRs by Type and Status</td>
<td>Breakout by solution type and status categories</td>
</tr>
<tr>
<td>Metric</td>
<td>DMT DB and Plan</td>
<td>PR Processing Time</td>
<td>Organizational PR durations versus time standards</td>
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<tr>
<td></td>
<td>DMT DB and DMEA Data</td>
<td>Cost Avoidance</td>
<td>Estimate of proactive solution benefit of established solutions</td>
</tr>
<tr>
<td>Advanced Analyses</td>
<td>Multiple Sources</td>
<td>Business Case Analysis</td>
<td>Econometric comparison of proactive and reactive programs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ops Impact Analysis</td>
<td>Projected DMSMS - induced depletion of SRU, LRU, WRA, and SRA spares</td>
</tr>
</tbody>
</table>
DMSMS Tools

• **No one tool will solve all of your DMSMS management problems**

• **The Business Case Analysis (BCA)**

  Helps to make selections among alternative courses of action

  Quantifies economic value in terms of Return on Investment (ROI) and Break Even Point (BEP)

  Generates two alternatives: reactive approach and proactive case
Operations Impact Analysis (OIA)

• Companion analysis to BCA

• Helps predict the effects of obsolescence on operational readiness

“If we do nothing about DMSMS, what happens to the weapons system?”
Operations Impact Analysis

- OIA sensitive to:
  - Platform operating hourly forecasts
  - Failure or replacement rates of the boxes and boards
  - Obsolescence trends of the system components
  - Number of spares for each type of boxes and boards in the system
Matrix of Boxes (LRU/WRA) or Boards (SRU/SRA)

- Shows the “draw down” of the population of spares
- Used to prioritize future obsolescence mitigation projects

<table>
<thead>
<tr>
<th>Name</th>
<th>Qty SRU/WRA per Platform</th>
<th>Qty SRU Spares</th>
<th>Initial</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
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<tr>
<td>SRU1</td>
<td>1</td>
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<td>G1</td>
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<td>Y0</td>
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<td>SRU3</td>
<td>4</td>
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<td>SRU9</td>
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<td>R</td>
<td>R</td>
<td>R</td>
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The "G1" for SRU1 in 2002 means the spares posture for SRU1 is green and there is one spare SRU1. In 2005, SRU1 changes to "Y0" because the OIA predicts a draw down of 1 spare (due to obsolescence) leaving a balance of zero (“Yellow”). SRU2 starts out “Yellow” no spares and changes to “R1” when the model indicates a draw down of SRU2 from 0 to -1.
• Advanced Analysis Techniques:
  – Synthesize input variables to infer conclusions
  – Model formulation must be rigorous
  – Can use as templates and guides
  – Many programs find them crucial to DMSMS management
DMSMS Software Tools

• Many tools available
  
  – Predictive tools help status the health of the components
  
  – Reliability tools help determine the reliability and supportability of on-hand assets
  
  – Logistics, sustainment, and other tools are government owned and free to the user
  
  – Various other tools are commercially owned and may cost the program per each license
## Sample Government Tools

<table>
<thead>
<tr>
<th>Tool</th>
<th>OPR</th>
<th>Fee?</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASSIST</td>
<td>DSP0</td>
<td>No</td>
<td>Specifications and standards</td>
</tr>
<tr>
<td>CDMD-OA</td>
<td>NAVSEA (DETPAC)</td>
<td>No</td>
<td>Configuration status accounting of systems and equipment</td>
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<tr>
<td>D200C</td>
<td>AFMC</td>
<td>No</td>
<td>LRU and SRU failure data</td>
</tr>
<tr>
<td>EMALL</td>
<td>DLA</td>
<td>No</td>
<td>Item of supply information and ordering (DLA Item Catalog)</td>
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<tr>
<td>GiDEP Notices</td>
<td>GiDEP</td>
<td>No</td>
<td>Historical and new discontinuance notices</td>
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<tr>
<td>JEDMICS</td>
<td>AFMC</td>
<td>No</td>
<td>Engineering drawing file system</td>
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<td>MEDALS</td>
<td>DLA</td>
<td>No</td>
<td>Engineering drawing location and revision</td>
</tr>
<tr>
<td>Microcircuit Query</td>
<td>DSCC</td>
<td>No</td>
<td>Manufacturer part number to standard microcircuit drawings</td>
</tr>
<tr>
<td>PC Link</td>
<td>DLA</td>
<td>No</td>
<td>Access to service databases</td>
</tr>
<tr>
<td>REMIS</td>
<td>AFMC</td>
<td>No</td>
<td>Reliability data</td>
</tr>
<tr>
<td>SDW</td>
<td>DLA Headquarters</td>
<td>No</td>
<td>Discontinuation notices</td>
</tr>
<tr>
<td>Sunset Supply Base</td>
<td>NAVSEA</td>
<td>Yes</td>
<td>COTS piece part solutions with OEMs</td>
</tr>
<tr>
<td>WebFLIS</td>
<td>DLA</td>
<td>No</td>
<td>Federal total item record</td>
</tr>
<tr>
<td>WebLink</td>
<td>DLA</td>
<td>No</td>
<td>Web-based version of PCLink</td>
</tr>
</tbody>
</table>
# Sample Commercial Tools

<table>
<thead>
<tr>
<th>Name</th>
<th>OPR</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haystack Gold®</td>
<td>IHS</td>
<td>Combines data from many databases</td>
</tr>
<tr>
<td>AVCOM®</td>
<td>BAE</td>
<td>Predictive tool and basic system analysis</td>
</tr>
<tr>
<td>Total Parts Plus®</td>
<td>Total Parts Plus, Inc</td>
<td>Predictive tool and basic system analysis</td>
</tr>
<tr>
<td>Q-Star®</td>
<td>QinetiQ</td>
<td>Predictive tool and basic system analysis</td>
</tr>
<tr>
<td>Sustain</td>
<td>Georgia Tech</td>
<td>System Sustainment Tool</td>
</tr>
<tr>
<td>Relex®</td>
<td>Relex</td>
<td>Reliability Tool</td>
</tr>
<tr>
<td>PRISM®</td>
<td>SRC</td>
<td>Reliability Tool</td>
</tr>
<tr>
<td>ILS®</td>
<td>ILS</td>
<td>Technical Research Tool</td>
</tr>
<tr>
<td>PartMiner®</td>
<td>PartMiner</td>
<td>Technical Research Tool</td>
</tr>
</tbody>
</table>
DOD DMSMS Knowledge Sharing Portal (DKSP) and Training

**The DKSP**

You can obtain:
- Training
- Research problem parts
- Regulations or Publications
- Many other Functions...

Goal is to eliminate redundant processes, tools, and databases

Continuous development
DKSP Web Site

• DKSP

Sponsored by DOD

www.dmsms.org

Good place to start
What is the DPMP?

• The Defense Parts Management Portal (DPMP) is a public website brought to you by the Parts Standardization and Management Committee (PSMC) to serve the defense parts management community.

• The DPMP is a new resource, a new marketplace, and a “one-stop shop” for parts management resources.

• It is a navigation tool, a communication and collaboration resource, and an information exchange. It gives you quick and easy access to the resources you need, saves you time and money, connects you to new customers or suppliers, and assists you with finding the answers you need.
Where is the DPMP?

https://dpmp.lmi.org
Available DMSMS Training

• Developed in partnership with DLA, DAU, Karta and ARINC

• Computer based training courses available on the DAU Continuous learning website

• Five Computer Based Training (CBT) Modules
  – DMSMS Fundamentals (CLL 201)
  – DMSMS for Executives (CLL 202)
  – DLA DMSMS Essentials (CLL 203)
  – DMSMS Case Studies (CLL 204)
  – DMSMS for Technical Professionals (CLL 205)
• **Total Life Cycle System Management (TLCSM)**
  – Requires programs to develop a plan and supporting business case
  – PBL is the preferred method

• **PBL Components**
  – Performance-Based Agreements
  – Product Support Integrator
  – Support Metrics and Incentives

• **The Goal:**
  – Standardizing a common approach to DMSMS management
  – Develop and make training available to help educate personnel on the tools, processes, programs, and other issues used to resolve DMSMS
Summary

- DMSMS Teams
- Statistics and Metrics
- DMSMS Tools
- DMSMS Training
- Standardizing Teams, Tools, & Training
Data and the BOM
Overview

• Defining the Bill of Materials (BOM)

• Levels of DMSMS Management

• COTS

• Managing DMSMS and COTS

• Additional Data Configurations
Introduction

• DMSMS Progress

Ever present Impediment

Progress has been

More progress is needed

Lack of Accurate/Complete BOMs
Data and the BOM

• **Bill of Materials (BOM)**: a listing of parts and required quantities, electronic, electrical, mechanical, and materials, used to identify repair parts or parts needed to fabricate (produce) a system or assembly

  – A “Flat File BOM” is a BOM that lists parts without indenturing relationships

  – An “Indentured BOM” is a BOM that shows the relationships of components from component to board, to box, to system, generally in a top down break out format
<table>
<thead>
<tr>
<th>CAGE</th>
<th>Part Number (P/N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>49956</td>
<td>G123456-1</td>
</tr>
<tr>
<td>81349</td>
<td>M38510/20302BEA</td>
</tr>
<tr>
<td>82577</td>
<td>3100024-54</td>
</tr>
<tr>
<td>01295</td>
<td>SNJ54800</td>
</tr>
<tr>
<td>System CAGE</td>
<td>System P/N</td>
</tr>
<tr>
<td>------------</td>
<td>-----------</td>
</tr>
<tr>
<td>49956</td>
<td>System</td>
</tr>
<tr>
<td>49956</td>
<td>System</td>
</tr>
<tr>
<td>49956</td>
<td>System</td>
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<tr>
<td>49956</td>
<td>System</td>
</tr>
<tr>
<td>49956</td>
<td>System</td>
</tr>
</tbody>
</table>
Many types of data required to manage the DMSMS problem

Some of these data are not available routinely, or are not required to be maintained by regulation.

For your specialty items, like application specific integrated circuits (ASICs), you need the complete drawing packages to potentially re-procure the part in the absence of the original source.

When lacking BOM data, we don’t know what is in the systems without some very labor-intensive and costly research.
• Common missing component is complete current configuration BOM
  – Purchase from OEM or develop from available data
  – Purchase Rights to Review the Data as needed

• Enables proactive DMSMS management
• Treat each and every redesign you pursue as if it were a new system acquisition

• The team should review the BOM for a new card or box and ensure the manufacturer isn’t using materials or parts that are about to become obsolete

• Identify and implement the most cost-effective solution: solution types and relative costs that give you a “cost avoidance”

There is a difference between a cost avoidance and a cost savings, and the interpretation is sensitive.
Levels of Management

- At what level should I manage my DMSMS problem?
  - Platforms
  - Boxes
  - Boards
  - Components

- How can I best support the mission of the warfighter?
• You can’t status the board without the component

• You can’t status the box without the board

• You can’t status the system without the box

• You need the component level health to describe the health of each tier above the component
Commercial-Off-the-Shelf (COTS)

- No degradation in reliability or performance
- Reduced cost
- Much of the test equipment used for repair and maintenance of our military systems is considered COTS
• What is COTS?

Toilet Paper
Mops and Brooms
Micrometer
Digital Multi-meter
Signal Analyzer
Oscilloscope
Diesel Fuel
Managing DMSMS and COTS

• Unexpected problems with COTS

The component life cycle was greatly accelerated

To include COTS equipment in a proactive DMSMS management program, parts lists must be entered into a predictive tool

Most COTS equipment isn’t cycled through normal provisioning process

May require manually creating a listing of parts to potentially ensure availability for a number of years

Might need to call known vendors on a monthly basis to determine the most current status

No predictive tools that specialize in COTS components, but with a large enough team and budget, it can be cost effective
• COTS usually come with a service manual

• IPB in back of manual can serve as a pseudo-BOM

• IPB may be of no use if parts are called out as OEM part numbers

• For COTS items, there is rarely any type of data available

• It is getting harder and harder to get industry to be sensitive to the government’s needs
If you decide to use COTS, look at:

- Dependence upon warranty
- Contractor logistics support
- Organic repair
- Periodic replacement to keep it operational

Many of these considerations are the same for military system acquisition, meaning you manage COTS in the same manner.
Additional Data Considerations

• We need system acquisition reform

• We have too many:
  Vendor Item Drawings
  Specification Control Drawings
  Source Control Drawings

• Ensure that only the absolute minimum number of special drawings is created
• Do you have a BOM for each of your systems?
  – If not, you may be forced into creating one from IPBs, which can:
    • Be costly
    • Take time
    • Introduce errors
    • Cause you to miss low-cost support opportunities

• TLCSM and PBL will help you eliminate some of the headaches

• But maintain caution in deciding to award long-term DMSMS management support to a prime manufacturer
Summary

• Defining the Bill of Materials (BOM)

• Levels of DMSMS Management

• COTS

• Managing DMSMS and COTS

• Additional Data Configurations
Financial Resources
Overview

- Financial Resources
- OSD Methodology
- Business Case Analysis
Introduction

• What if you had unlimited financial resources?

• You would have:
  Unlimited spare parts
  Plenty of Personnel
  Money to solve all problems

• Unfortunately, we don’t live in a utopian world!

• You must plan and work to secure the resources required to establish some sort of a proactive DMSMS management program for your programs
Financial Resources

- No current DMSMS funding line in the federal budget
- Each program must determine their needs and how they can legitimately obtain the supporting resources
- Those who have been successful, discovered that there are two parts to funding an issue:
  
  What “color of money” is needed
  
  Where you get the funding to implement your identified solutions
• You are not going to be handed a sum of money in your normal budget, thus:

Understand your DMSMS problem when allocating your resources

Plan for DMSMS management in your initial budget planning

Take your issues and concerns through the established chain of command

Tell it like it is, but recommend solutions to the problems identified
OSD Methodology

• **Cost avoidance**

  Find solutions early

  Cost Metrics data

  Average costs

  OSD methodology
Example circuit card:

OSD average cost “substitute” $25K
Next most expensive “aftermarket” $62K
Difference $37K

If “aftermarket” not feasible:

OSD average cost “substitute” $25K
Next most expensive “redesign” $159K
Difference $134K

Similar calculations are planned for material DMSMS resolutions. There are currently no developed materials solutions cost guides available at this time; current microelectronics cost guide will be adapted as practical for non-electronics DMSMS resolution analysis.
## Sample Program Cost Avoidance

<table>
<thead>
<tr>
<th>Solution Type</th>
<th>Solution Status</th>
<th>PPR Count</th>
<th>Cost Avoidance Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emulation</td>
<td>Unfunded</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Obtain Firmware</td>
<td>Firmware Solution In Work</td>
<td>2</td>
<td>$60,000</td>
</tr>
<tr>
<td></td>
<td>Unfunded</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Redesign NHA</td>
<td>Unfunded</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Redesign Part</td>
<td>Engineering Solution Complete</td>
<td>5</td>
<td>$2,700,000</td>
</tr>
<tr>
<td>Substitute Multi-year Buy</td>
<td>Engineering Solution Complete</td>
<td>1</td>
<td>$55,000</td>
</tr>
<tr>
<td></td>
<td>MYB Complete (with PPRs)</td>
<td>54</td>
<td>$1,800,000</td>
</tr>
<tr>
<td></td>
<td>MYB Complete (no associated PPR)</td>
<td>500</td>
<td>$17,000,000</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unfunded</td>
<td>298</td>
<td>$0</td>
</tr>
<tr>
<td>No Support Impact</td>
<td>Approved Alternate Available</td>
<td>71</td>
<td>$200,000</td>
</tr>
<tr>
<td></td>
<td>Part No Longer Used</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>Reclamation</td>
<td>Reclaimed Parts On-hand</td>
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<td>$0</td>
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<tr>
<td></td>
<td>Transfer Complete</td>
<td>9</td>
<td>$27,000</td>
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<tr>
<td>Transfer Assets</td>
<td>Transfer Pending</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>$21,842,000</td>
</tr>
</tbody>
</table>
• BCA

Helps to make selections among alternative courses of action

Generates two alternatives:

1) The reactive approach
2) The proactive case
Reactive Approach

The Equipment Specialist (or equivalent) processes and reacts to Discontinuation Notices.

Problems go unnoticed until repair part is needed.
Proactive Case

DMT identifies potential obsolete parts

Shortages preemptively resolved

Problems corrected before they emerge
Break Even Point

Shows the payback period of an alternative

Plots the cumulative benefit less the cumulative operations cost

Shows the difference between the reactive and proactive approach costs
**Sample Economic Analysis Summary**

<table>
<thead>
<tr>
<th>Item</th>
<th>Reactive ($M) (^2)</th>
<th>Proactive ($M) (^2)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMSMS Program Costs</td>
<td>N/A</td>
<td>$30M</td>
<td></td>
</tr>
<tr>
<td>DMSMS Solution Costs</td>
<td>$180M</td>
<td>$65M</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>$180M</td>
<td>$95M</td>
<td></td>
</tr>
<tr>
<td>Benefit</td>
<td></td>
<td>$115M</td>
<td>=$180M-$65M</td>
</tr>
<tr>
<td>Break Even Point</td>
<td></td>
<td>Sep FY 2006</td>
<td>see BEP Plot (previous slide)</td>
</tr>
<tr>
<td>Cost to Benefit Ratio</td>
<td></td>
<td>3.2</td>
<td>=$95M/30M</td>
</tr>
<tr>
<td>Return on Investment</td>
<td></td>
<td>2.2</td>
<td>=$($95M-$30M)/30M</td>
</tr>
<tr>
<td>Net Value</td>
<td></td>
<td>$85M</td>
<td>=$180M-$95M</td>
</tr>
</tbody>
</table>

\(^1\)Through a particular year  
\(^2\) In equivalent year $
Summary

- Financial Resources
- OSD Methodology
- Business Case Analysis
Concluding Thoughts

Lack of experienced or trained DMSMS personnel and support (Management Buy-in)

Not enough human resources to assign to all DMSMS duties (Teams, Tools, & Training)

Lack of indentured Bills-of-Materials (BOMs)

Never enough money (Financial Resources)

Counterfeiting is an ever present danger
Keys to Success

Management “buy-in” or commitment

Program centered around a team, tools, & training

Bill-of-Material (BOM)

Financial resources
DSCC DMSMS Office

Defense Supply Center, Columbus
Attn: David G. Robinson, DSCC-VSD
3990 East Broad Street
Columbus, OH 43218-3990
Phone: (614) 692-7493
E-Mail: david.g.robinson@dla.mil
dmsms@dsc.dla.mil
drobinson@jcaa.us

Defense Supply Center, Columbus
Attn: Marcia Scott, DSCC-VSD
3990 East Broad Street
Columbus, OH 43218-3990
Phone: (614) 692-7424
E-Mail: Marcia.L.Scott@dla.mil

For Information on GEM: Mr. Tom Beckstedt, Thomas.Beckstedt@dla.mil, Phone: (614) 692-0660
For Information on AME: Mr. William Johnson, William.J.Johnson@dla.mil, Phone: (614) 692-5346

Websites:
http://dmsms.org
http://www.gemes.com