INSTITUTE FOR DEFENSE ANALYSES

DMSMS Management Plan (DMP) Training

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About This Publication
This work was conducted by the Institute for Defense Analyses (IDA) under contract HQ0045-14-D-0001, project AI-6-5072, "Manufacturing Sources and Material Shortages (DMSMS) and Parts Management for Microelectronics and Other Items," for the Defense Standardization Program Office (DSPO) through the Defense Microelectronics Cross Functional Team chartered by USD(R&E).The views, opinions, and findings should not be construed as representing the official position of either the Department of Defense or the sponsoring organization.

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Executive Summary

Diminishing manufacturing sources and material shortages (DMSMS) management is a multidisciplinary process to identify risks resulting from obsolescence, loss of manufacturing sources, or material shortages; to assess the potential for negative impacts on schedule or readiness; to analyze potential mitigations; and then to implement the most cost-effective resolution. Parts management is an engineering discipline for selecting parts for use in a Department of Defense system (or equipment) and take into account considerations that affect the design, production, operation, support, and disposal throughout the life cycle of the system. In March 2022, a Parts and Material Management Conference (PMMC) will cover both topics. The Institute for Defense Analyses (IDA) prepared or substantially helped craft seven briefings for this event.

Three of the briefings will be used for training; they will be presented by DOD practitioners.

- Standardization-related Document (SD) 22 is DOD's overarching DMSMS guidance. DOD published an updated SD-22 (written by IDA) in January 2021 and IDA is preparing another update. NS D-32993 is a substantially modified three-hour training course on the SD-22 processes.
- Development of a DMSMS Management Plan (DMP) is an important early step in DMSMS management. The January 2021 and forthcoming SD-22s formalized DMP development guidance. NS D-32973 is new DMP preparation training.
- •DOD prime contractors perform many DMSMS procedures and even more parts management procedures. NS D-32996 makes minor revisions to existing training on DMSMS contracting and adds preliminary parts management contracting material.

IDA will present the remaining four briefings in technical sessions. These briefings cover the results of specific subtasks from several IDA projects performed in the last two years.

- NS D-32929 provides a detailed explanation of often-misunderstood DMSMS management interfaces with product, product improvement, supportability, and technology roadmaps. This material is a large part of the forthcoming SD-22 revision.

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- NS D-32956 describes how to improve the content of manufacturing readiness assessments (MRAs) through a more rigorous consideration of DMSMS management and parts management in the assessment criteria. MRAs are regulatory requirements throughout DOD's acquisition process.
- •NS D-32930 delves into cybersecurity and hardware assurance (HwA) considerations associated with implementing resolutions to DMSMS issues. IDA will also moderate a plenary panel on this subject at the PMMC. IDA plans to use these events to help formulate future policy recommendations.
- NS D-32962 defines new DMSMS resolutions and estimates their average cost. These changes contribute to a more accurate estimate of cost avoidance from proactive DMSMS management and also provide program offices with an initial estimate of resolution cost when no other information is readily available.

DMSMS Management Plan (DMP) Training

What is a DMP?

- **A DMP:**
  - **Documents the foundations of a DMSMS management approach for a program office; and**
  - **Identifies the risks associated with deviations from the standard DMSMS management processes described in the SD-22**

- **DMSMS management foundations reflect a program manager's (PM's) priorities for the management approach of the program office's DMSMS Management Team (DMT)**
- **Program office's DMT develops the DMP; PM approves and endorses**

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Why is the DMP Important?

- Establishes a robust DMSMS management framework for a program office, without which a program office cannot have effective DMSMS management
- Integrates DMSMS management principles and tailors DMSMS management processes within the program office's mission
- Describes the duties of the DMT and its members and provides the DMT authority to put the approved DMP into action

To stay ahead of future obsolescence, Department of Defense Instruction (DODI) 4245.15 requires all program offices to have a DMP

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DMP Philosophy

- Not a checklist; however the SD-22 and a DMP template provide guidance on the outline and format for DMPs
- Intended to:
  - Require thought (e.g., integration and tailoring to fit the program office mission and circumstances)
  - Serve as a living document that does not collect dust on a shelf, but is adjusted as conditions change
- No prescribed length; the DMP should be as long as it needs to be
- Do not parrot back the SD-22; it should not be a tutorial on DMSMS management
- Refer to other documents as much as possible to avoid duplication

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DMP Timing

- Initial plan developed early in the Technology Maturation Risk Reduction Phase of a program office's life cycle
- Updated when key programmatic events occur. For example:
  - Preliminary Design Review
  - Milestone B
  - Critical Design Review
  - Low Rate Initial Production
  - Full Rate Production
- Updated when the scope of DMSMS activities change outside of programmatic events (e.g., more systems monitored)

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How Guidance is Formatted in This Training (and in the SD-22)

DMP Section Title

Questions to be deliberated

Considerations for the deliberations to develop a DMP tailored to the program office's specific circumstances

No policy-prescribed outline for the DMP sections; preferred outline from the SD-22 follows

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Preferred Organization of DMP Sections

- **Purpose**
- **Scope and Applicability**
- **DMSMS Management Approach**
- **DMSMS Management Team**
- **DMSMS Management Operations**
- **Funding**
- **Contract Requirements**
- **Metrics, Reporting, and Quality**

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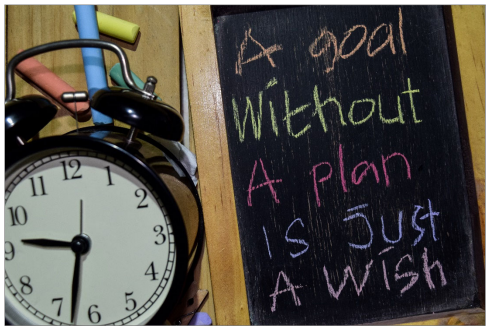
Purpose

What are the system's/program office's near-term and long-term DMSMS management objectives?

- **Example choices (as a function of life-cycle phase)**
  - **Resolve all issues before readiness or schedule impact**
  - **No reactive DMSMS cases except where planned**
  - **Keep annual resolution cost below $X**
  - **Avoid out-of-cycle redesigns**



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Scope and Applicability

To what program offices/systems does the plan apply?

- Identify the systems/subsystems covered by the DMP (including foreign military sales [FMS], if applicable)
  - Number
  - Time frame for coverage
  - Brief description
- If not every system/subsystem is included, provide rationale for exclusions
- Choices ultimately require bills of material (BOMs) and other technical data for surveillance and analysis

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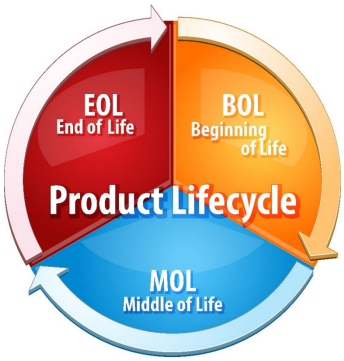
Scope and Applicability

For each applicable system, what is the Acquisition Strategy (AS), where is the system in its life cycle, and what are the sustainment strategy, modification plans, and maintenance approach?



- Indicate, as a function of AS and life-cycle phase
  - What is being supported (including FMS)
  - How many systems are in production
  - What modifications are ongoing/ planned
  - What technology refreshment/ insertions are planned
- Indicate extent of sustainment support
  - What is organic
  - What is from contractors
  - Any planned changes

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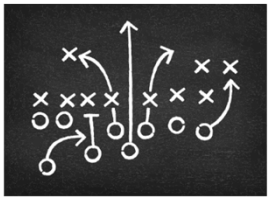

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DMSMS Management Approach

For each applicable system, what will be the primary DMSMS management roles of contractors, program office personnel, and independent subject matter experts (SMEs) and how will the program office maintain a life-cycle perspective for its DMSMS management approach?

- Regardless of relative roles and responsibilities, the program office is ultimately the responsible party
- Duplicative effort by SMEs is not productive, but a second opinion is valuable and SME organizations may have different time horizons
- DMP should explain
  - Who performs DMSMS management for which systems
  - Who performs vendor surveys
  - Who proposes/evaluates resolutions
  - The role of the program office in all these areas
  - Changes throughout the life cycle

DMSMS Management Approach

Where should the program office be reactive, and where should the program office be proactive?

- DMP should use a risk-based perspective to prioritize
  - The systems/subsystems to be monitored over time
  - Frequency of monitoring activities
  - Which items in those systems will be proactively monitored
  - What classes of items (e.g., software, material) will be proactively monitored
  - What information is to be obtained for one-time manufactured items

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DMSMS Management Approach

What mechanisms (i.e., product discontinuation notices (PDNs), predictive tools, vendor surveys, and DMSMS management information systems) will the program office use for monitoring, assessing, analyzing, and performing case management?

- DMP should identify
  - Discontinuation information sources
    - Monitoring tools and vendor surveys to be used and frequency thereof
  - Case management systems
  - Access restrictions to data and tools

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DMSMS Management Approach

What contingency plans are in place for potential programmatic changes?

- Programmatic risks include
  - Planned service-life extension
  - Planned modifications
  - Planned technology refreshment
  - Shift in support providers (e.g., from contractor to organic)
- Identify the impact of these risks on the DMSMS management foundations and the DMP

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DMSMS Management Team

Who are the stakeholders for the robust management of DMSMS issues for the program office (including other DMSMS management program offices that interact with the DMSMS management program office for the system in question)?

- The DMP should define DMT membership
- Regular members include
  - Engineering
  - Product support
  - Government subject matter expert
  - Representatives from prime and major suppliers
  - Government lead
- Other members needed at certain times
  - Contracting
  - Defense Logistics Agency (DLA)
  - Industrial base

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DMSMS Management Team

What are the roles of the DMT members and who will fulfill those roles?

- **The DMP should**
  - **Define the roles and responsibilities of DMT members**
  - **Define the priorities of these responsibilities vis-à-vis others**
  - **Determine the qualifications required to fulfill the roles and responsibilities (e.g., courses to take)**

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DMSMS Management Team

What communication is required of the DMT internally and externally?

- **DMP should include**
  - **DMT meeting frequency**
  - **DMT action item monitoring and follow-up**
  - **Interfaces with program office Integrated Process Teams**
  - **Process for sharing information external to the program office**
  - **Documentation of DMT activities**
  - **Frequencies of updates to assessments**

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DMSMS Management Operations

How will the program office's DMSMS management efforts be integrated with other strategies, planning, and reviews (e.g., product support strategies, the systems engineering design and review process, and modification planning)?

- The DMP should describe the interface processes for the DMT to
  - Ensure interfaces to advocate for DMSMS-resilient designs
  - Assess preliminary designs for DMSMS risk
  - Provide health assessments to inform/integrate DMSMS funding with modification funding
  - Perform supply chain risk management to identify, assess, and address potential obsolescence risks
- The DMP should also describe the processes to ensure that program office strategists and planners reach out to the DMT

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DMSMS Management Operations

What DMSMS management intensity levels will be used?

- Consider a self-assessment using DMSMS management intensity levels
- Reflect DMSMS management intensity level decision in the DMP
  - Document targets for all DMSMS management processes
  - Describe why the targets are appropriate
  - Explain plan to achieve targeted intensity levels

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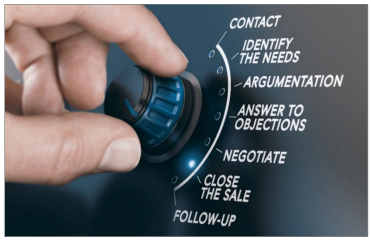
DMSMS Management Operations

How have DMSMS management processes been tailored for this plan?



- The DMP should document where the program office's DMSMS management processes differ from the SD-22 standards (referencing external documentation where feasible)
- Tailoring may be the result of unavailable data

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DMSMS Management Operations

How will the DMT provide oversight of contractor DMSMS management efforts?

- Level of DMT involvement depends on the extent of contractual DMSMS management requirements on the prime contractor that will implement the resolution
- The DMP should define the reports that will be required and how they will be used for oversight

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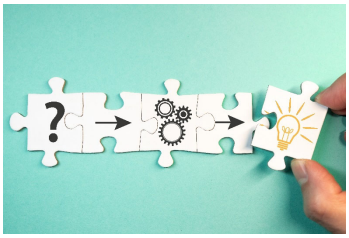
DMSMS Management Operations

How will DMSMS issues be detected, tracked, and resolved?



- Document data sources (e.g., BOMs obtained on contracts, programmatic data) and other inputs needed as well as how the data will be used
- Identify the risk-based priority for loading BoMs into predictive tools and events that trigger updates
- Describe which items will be proactively monitored and how and when they will be monitored
- State how and how often notifications will be received and processed (verify validity)
- Explain how cases will be initiated, prioritized, analyzed, managed, and resolved

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Funding

What resources have been programmed and budgeted for DMSMS management operations?

- The DMP should document resource needs and availability for DMT operations and how risks associated with mismatches will be mitigated (DMSMS management foundations may change)
- Resource needs include
  - Subscriptions to DMSMS management tools
  - DMSMS management services
    - From prime, original component manufacturers (OCMs) and OEMs
    - From independent subject matter experts within the government or in commercial industry

- Resources for DMSMS management operations should be programmed and budgeted over the Program Objective Memorandum (POM) period

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Funding

What resources have been programmed and budgeted for resolutions for known and anticipated DMSMS issues?

- DMSMS issues should be projected over the POM period
- Resources needed and available to resolve those issues should be estimated

- The DMP should document resource needs and availability for resolving DMSMS issues and how risks associated with mismatches will be mitigated (DMSMS management foundations may change if risks cannot be mitigated)
- Resources to implement the resolutions should be programmed and budgeted over the POM period
  - Lack of precision is NOT a rationale for failing to program and budget adequately

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Contract Requirements

What DMSMS management operations and/or resolution implementation requirements will be imposed on the contractor and/or independent subject matter experts?

- DMSMS contracting guide (SD-26) available
  - Provides sample contract language by life-cycle phase
  - Establishes criteria to determine the extent of external DMSMS management operations support needed from external sources
  - References associated Data Item Descriptions (DIDs) and Contract Data Requirements Lists (CDRLs)
- Typically contracting requirements cover
  - DMSMS responsibilities of the contractor
  - BOMs
  - DMSMS Alerts
  - Technical data
  - Mechanisms to manage issues across breaks in contract periods of performance
  - Exit strategies

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Contract Requirements

Are there any desired DMSMS management requirements that were not incorporated into the final contract with the prime/original equipment manufacturers (OEMs)?

- All DMT-determined DMSMS management contract requirements are not always put on a contract; they may be negotiated away
- The DMP should
  - Identify what was not included
  - Assume the added risk
  - Identify how that risk will be mitigated to the extent possible (DMSMS management foundation may change)

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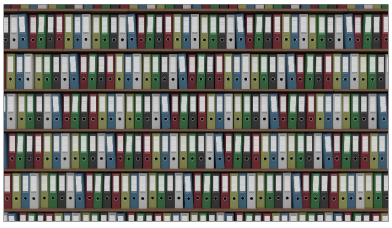
Metrics, Reporting, and Quality

What data elements will the program office collect?

- The forthcoming DOD DMSMS Manual (DODM) requires two types of record keeping data to be collected
  - Cost-related
    - Resolution type and cost
    - Cost of DMSMS management operations
  - Efficiency-related
    - Case processing type
    - Cases opened reactively
    - Reactive resolutions avoided



- Consideration should also be given for collecting information on DMSMS management process compliance
- DMP should indicate how the data will be maintained and collected (including periodicity and responsibility)

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Metrics, Reporting, and Quality

How will the data elements be used?

- The DMP should document how the DMT will
  - Use Level 1 data elements to improve DMSMS management operations, reduce DMSMS-related costs, prevent DMSMS issues from impacting readiness or schedule, and be in a strong position to explain and prove the benefits of the program office's DMSMS management efforts
  - Use Level 2 data elements to enhance these benefits by enabling more complex analyses
  - Measure process compliance
- Examples provided in the SD-22

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Metrics, Reporting, and Quality

What types of deliverables will the program office expect as outputs of its DMSMS management implementation approach?

- The DMP should provide a deliverables schedule
- Potential deliverables include
  - Health assessments (Tombstone charts)
  - Notifications of obsolescence
  - Status of resolutions
  - Supportability roadmaps that inform technology refreshments
- DMSMS risks should be reported and highlighted to program office management – whether internal or external to the program office's risk management process

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For More Information

- **This course is based on material from the SD-22**
  - **https://www.dau.edu/tools/t/SD-22-Diminishing-Manufacturing-Sources-and-Material-Shortages-(DMSMS)-Guidebook**
- **A DMP template can be found at**
  - **https://www.dau.edu/cop/dmsms/DAU%20Sponsored%20Documents/DMSMS%20Management%20Plan%20Template_6Oct2020.docx**
- **Systems Planning and Requirements Software (SYSPARS) is a multi-service expert system that can guide a program office in the development of a DMP**
  - **https://www.dau.edu/tools/t/Systems-Planning-and-Requirements-Software-(SYSPARS)**

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13. SUPPLEMENTARY NOTES

14. ABSTRACT

A DMSMS Management Plan (DMP) documents the foundations of a DMSMS management approach established by program office leadership and identifies the risks associated with deviations from the standard DMSMS management processes described in this document. As such, the DMP establishes a robust DMSMS management framework for a program office. Without an adequate plan, a program office cannot have effective DMSMS management. Developing a DMP requires detailed consideration of how DMSMS management principles should be integrated within the program office's mission. The DMP also describes the DMSMS management team and its duties within a set of tailored DMSMS management processes ideally designed to avoid miscommunication. The tailoring is a function of each program office's specific infrastructure, record keeping procedures, quality management plans, resources, priorities, and constraints (e.g., the number of people, the amount of funding, access to bills of material/parts lists and associated technical data, and the ability to conduct vendor surveys on item availability). This presentation is training on the development of a DMP.

15. SUBJECT TERMS

DMSMS, obsolescence, DMP, DMSMS Management Plan, Obsolescence Management Plan

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