# TECHNICAL REPORT

| STD-0016™ | REV. A |
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| Issued 2011-08<br>Revised 2023-12<br><br>Superseding STD-0016 | |

Standard for Preparing a DMSMS Management Plan

RATIONALE

This standard was created and is being updated in response to the growing risk that Diminishing Manufacturing Sources and Materials Shortages (DMSMS) poses to the production and support of aerospace equipment.

FOREWORD

Companies that develop and produce ADHP (Aerospace Defense and High Performance) equipment face increasing risks due to the impacts of DMSMS. Product life cycles are generally much greater than the life cycles of the parts used in their products, and this poses significant risks to parts procurements and product manufacturing. Further, supply chain shortages and availability issues plague the industry driving a need to detail best practices to address the DMSMS problem. This standard covers that need and includes both requirements and guidelines to be used by Plan owners when developing practices to mitigate the risks.





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# 1. SCOPE

This standard defines the requirements used by the Plan owner to develop a DMSMS Management Plan, hereinafter referred to as the Plan. The requirement to develop a DMSMS Management Plan could come from a number of different sources, such as a contractual or customer requirement or a desire by the Plan owner to document their standard process. The process described in the Plan is intended to mitigate DMSMS risks and resolve DMSMS issues on ADHP equipment provided by the Plan owner.

Development of a plan that conforms to the technical requirements detailed in Section 3 ensures that the Plan owner meets the requirement of a DMSMS, or obsolescence management plan, required by industry standards, government regulations, and/or other contractual flow-down requirements, such as:

a. EIA-STD-4899, Standard for Preparing an Electronic Components Management Plan

b. AS5553, Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition

c. DFARS 252.246-7007, Contractor Counterfeit Electronic Part Detection and Avoidance System

The terms DMSMS and obsolescence are both used in industry and are very similar, though not identical (see 2.3). However, from a process management perspective, obsolescence and DMSMS both contain the same basic elements, as shown in Figure 1, and since this standard focuses on process requirements, in this document the terms are considered interchangeable.

## 1.1 Purpose

For the purposes of this standard, owners of DMSMS Management Plans include system integrators, original equipment manufacturers (OEM), and logistic support providers of ADHP equipment. The Plan defines the basic process requirements that are used by the Plan owner to develop and deploy a DMSMS management process. It is not intended for use by manufacturers of parts or materials.

This standard states requirements to be accomplished; however, it does not specify how tasks are to be performed, specific data to be collected, or reports to be issued. Plan owners are encouraged to document processes that are the most effective and efficient for them in accomplishing the requirements stated in this standard.

To aid in the development of plans, a Compliance Matrix (see Appendix A) and Verification Criteria (see Appendix B) have been added to help document that the Plan conforms to the requirements in the standard. In addition, Appendix C has been added to provide guidance on methods to develop a Plan. Appendix C does not invoke additional requirements, nor should it be interpreted as a mandatory method for meeting the requirements in this standard.

Organizations that prepare such Plans may prepare a single Plan and use it for all relevant products supplied by the organization, or it may prepare a separate Plan for each separate product or customer.



# 2. REFERENCES

## 2.1 Applicable Documents

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

| | |
|---|---|
| ARP6328 | Guideline for Counterfeit Electrical, Electronic, and Electromechanical Parts; Avoidance, Detection, Mitigation, and Disposition Systems |
| AS5553 | Counterfeit Electrical, Electronic, and Electromechanical (EEE) Parts; Avoidance, Detection, Mitigation, and Disposition |
| AS9100 | Quality Management Systems - Requirements for Aviation, Space, and Defense Organizations |

NOTE: SAE adopted IAQG standard for the Americas, also available as EN9100 and JISQ9100.

| | |
|---|---|
| SAE EIA-STD-4899 | Requirements for an Electronic Components Management Plan |
| SAE EIA-933 | Requirements for a COTS Assembly Management Plan |

2.1.2 IEC Publications

Available from IEC Central Office, 3, rue de Varembe, P.O. Box 131, CH-1211 Geneva 20, Switzerland, Tel: +41 22 919 02 11, www.iec.ch.

| | |
|---|---|
| IEC 60050-192 | International Electrotechnical Vocabulary (IEV) - Part 192: Dependability |
| IEC 62239-1 | Process management for avionics - Management plan - Part 1: Preparation and maintenance of an electronic component management plan |
| IEC TS-62239-2 | Process management for avionics - Management plan - Part 2: Preparation and maintenance of an electronic COTS assembly management plan |
| IEC 62402 | Obsolescence Management |
| IEC 62668-1 | Process management for avionics – Counterfeit Prevention - Part 1: Avoiding the use of counterfeit, fraudulent and recycled electronic components |
| IEC 62668-2 | Process management for avionics – Counterfeit Prevention - Part 2: Managing electronic components from non-franchised sources |

2.1.3 ISO Publications

Copies of these documents are available online at https://webstore.ansi.org/.

| | |
|---|---|
| ISO 9001 | Quality Management Systems - Requirements |

2.1.4 U.S. Government Publications

Copies of these documents are available online at https://quicksearch.dla.mil.

| | |
|---|---|
| DI-MGMT-82274 | DMSMS Lifecyle Management Data |
| SD-22 | Diminishing Manufacturing Sources and Materials Shortages, A Guidebook of Best Practices and Tools for Implementing a DMSMS Management Program |

2.1.5 Other Publications

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|---|---|
| VITA 53.0 | Standard for Commercial Technology Market Surveillance |

2.2 Related Documents

ARINC 662-1 Obsolescence Management Strategies for Commercial Aircraft

2.3 Terms and Definitions

For the purpose of this standard, the following definitions apply. Plan owners may use alternative terms consistent with convention within their company if these are defined in the Plan.

AUTHORIZED DISTRIBUTION: Transactions conducted by an organization distributing product within the terms of a contractual agreement with the original component manufacturer.

NOTE: Contractual agreement terms may include, but are not limited to, distribution region, distribution products or lines, and warranty flow down from the manufacturer.

NOTE: For the purposes of this standard, franchised distribution is considered synonymous with authorized distribution.

AUTHORIZED DISTRIBUTOR: An organization that performs authorized distribution.

NOTE: For the purposes of this standard, a franchised distributor is considered synonymous with an authorized distributor.

BILL OF MATERIAL (BOM): A listing of items and required quantities; electronic, electrical, mechanical, and materials, used to identify repair parts or items needed to fabricate (produce) a system or assembly. A BOM may include indenturing which depicts the top-down breakout relationship of items to the next higher assembly.

BRIDGE BUY: Procurement of a sufficient number of parts to allow time to develop another DMSMS solution.

COMMERCIAL-OFF-THE-SHELF (COTS) ASSEMBLY: An assembly developed by a supplier for multiple customers, whose design and configuration are controlled by the supplier's or an industry specification.

DIMINISHING MANUFACTURING SOURCES AND MATERIAL SHORTAGES: The loss or impending loss of manufacturers of items or suppliers of items or raw materials or software.

ELECTRONIC, ELECTRONIC, AND ELECTROMECHANICAL (EEE) PART: Components designed and built to perform specific functions using electrical power and/or electric or electromagnetic signal to demonstrate functionality (refer to AS5553).

NOTE: An electromagnetic signal can consist of the following: radio waves, microwaves, infrared waves, visible light, ultraviolet waves, X-rays, and gamma rays. The following is a partial list of examples: electrical parts, including resistors, capacitors, inductors, wire, cable, transformers and connectors; electronic parts, including active devices such as monolithic microcircuits, hybrid microcircuits, diodes and transistors; electromechanical parts having electrical inputs with mechanical outputs or mechanical inputs with electrical outputs, or combinations of each; examples of electromechanical parts are motors, synchros, servos, and some relays which may appear as assemblies but are considered EEE parts.

EMULATION: The process where a supplier provides a form-fit-function replacement for the DMSMS item using state-of-the-art technology. The internal configuration of the item may be different, but it is designed to meet all of the performance requirements of the original item specification.

END OF PRODUCTION (EOP) or END OF LIFE (EOL): The date when a manufacturer discontinues production of an item.

NOTE: EOL and EOP are terms used by various segments of industry and are considered synonymous in this standard.

ITEM: For the purposes of this standard, an item is a term used to define an element that is integrated in a product provided by the Plan owner and is covered by the process described in the Plan.

NOTE: An item may be a part or component, device, assembly, material, software, or any other element that can become obsolete during the product's life cycle. For additional reference, refer to definitions in IEC 60050 for Item and Subitem (IEC 60050-192:2015 [2], 192-01-01 and 192-01-02).

LIFETIME BUY or LIFE-OF-NEED BUY: Procurement of a sufficient quantity of a DMSMS part to meet full production plus sustainment requirements for the expected life cycle of the equipment.

NOTE: Lifetime Buy and Life-of-Need Buy are terms used by various segments of industry and are considered synonymous in this standard.

LIFE CYCLE: A generic term relating to the entire period of concept, definition, build, distribution, operation, sustainment, and disposal of a product.

MANUFACTURER: The organization or individual with responsibility for the design, manufacture, packaging, and labelling of an item before placing the item on the market under their own name or trademark (refer to 3.1.11 of IEC 62402:Ed2).

NOTE: For the purposes of this standard, a manufacturer provides an item that is integrated or planned to be integrated in a product provided by the Plan owner.

MAY: Indicates a course of action which is permissible within the limits of this document.

OBSOLETE: No longer in production from the manufacturer in accordance with the original specification.

NOTE: This is not the dictionary definition but is instead taken from IEC 62402 (refer to 3.1.15 and 3.1.16 of IEC 62402:Ed2). In the context of this standard, this definition is being used since it reflects the industry usage of this term. For a detailed discussion on the relationship between the terms obsolete and DMSMS, refer to Appendix A of SD-22.

OBSOLESCENCE: The transition of an item from available to unavailable from the manufacturer in accordance with the original specification.

NOTE: This is not the dictionary definition but is instead taken from IEC 62402 (refer to 3.1.2 of IEC 62402:Ed2). In the context of this standard this definition is being used since it reflects the industry usage of this term. For a detailed discussion on the relationship between the term's obsolescence and DMSMS, refer to Appendix A of SD-22.

OPEN SYSTEMS ARCHITECTURE: Design approach that uses publicly available documents defining specification for interfaces, services, protocols, or data formats established by consensus and widely used in the marketplace.

ORIGINAL EQUIPMENT MANUFACTURER (OEM): A company with design authority that sells products manufactured and assembled from parts and materials under the company's brand name.

PLAN OWNER: The original design authority responsible for all aspects of the delivered equipment's design, functionality, and reliability in the intended application and is responsible for writing and maintaining the DMSMS Management Plan.

RECLAMATION: Salvaging obsolete parts from unserviceable or surplus equipment.

REVERSE ENGINEERING: The process of developing an exact replica of an item by using technical data, disassembled, and analyzed copies of the original part and test data.

RISK: A measure of the potential inability to achieve overall program objectives within defined cost, schedule, and technical constraints.

RISK MANAGEMENT: The act or practice of dealing with risk. It includes planning for risk, assessing (identifying and analyzing) risk areas, developing risk-handling options, monitoring risks to determine how risks have changed, and documenting the overall risk management program.

SHALL: Indicates a requirement.

SHOULD: Offers a guideline or recommendation that might be used or helpful to assure compliance to an objective.

SPECIFICATION: A document that explicitly states essential technical attributes/requirements for a product and procedures to determine that the product's performance meets its requirements/attributes.

SUBCONTRACTOR: A person or entity to which the holder of obligations under a contract has delegated part or all of such obligations.

SUBSTITUTE PART: A part used as a replacement in equipment after the equipment design has been approved that has an acceptable degree of interchangeability.

TECHNOLOGY REFRESH/TECHNOLOGY INSERTION: Programmatic system management strategy to replace the electronics in a system over a specific period of time, usually with the goal of improved performance, reliability, and supportability.

WILL: Expresses a declaration of intent when used in the context of being compliant to this document.

## 2.4 Acronyms

| | |
|---|---|
| ADHP | Aerospace Defense and High Performance |
| BOM | Bill of Material |
| CAMP | COTS Assembly Management Plan |
| COTS | Commercial Off-the-Shelf |
| DMP | DMSMS Management Plan |
| DMSMS | Diminishing Manufacturing Sources and Material Shortages |
| DoD | Department of Defense |
| EEE | Electrical, Electronic, and Electromechanical |
| EOL | End-of-Life |
| EOP | End of Production |
| GIDEP | Government-Industry Data Exchange Program |
| LRU | Line Replaceable Unit |
| MOE | Method of Evaluation |
| OEM | Original Equipment Manufacturer |
| PL | Parts List |
| RACI | Responsibility, Accountability, Consult, or Inform |
| RFI | Request for Information |
| SOW | Statement of Work |
| SRU | Shop Replaceable Unit |
| VITA | VMEbus International Trade Association |

## 3. TECHNICAL REQUIREMENTS

The Plan owner shall develop a DMSMS Management Plan, hereinafter called the Plan, which documents the processes used by the Plan owner to meet each of the requirements in this section. These requirements comprise the primary elements necessary to implement a DMSMS Management process throughout the life cycle of the equipment and shall include:

a. DMSMS Program Infrastructure (see 3.1)

b. Subcontractor DMSMS Management Strategy (see 3.2)

c. Sustainment DMSMS Strategy (see 3.3)

d. Design Concepts to Minimize DMSMS Risk and Impact (see 3.4)

e. DMSMS Monitoring and Surveillance (see 3.5)

f. Resolving DMSMS Issues (see 3.6)

g. DMSMS Risk Assessments and Forecasting (see 3.7)

The Plan shall be maintained, updated, and sustained based on evolving obsolescence management techniques and trends. Figure 1 provides an illustrative example of the relationship of the elements in the DMSMS Management Plan. It is not intended to depict a specific chronological flow of the elements.

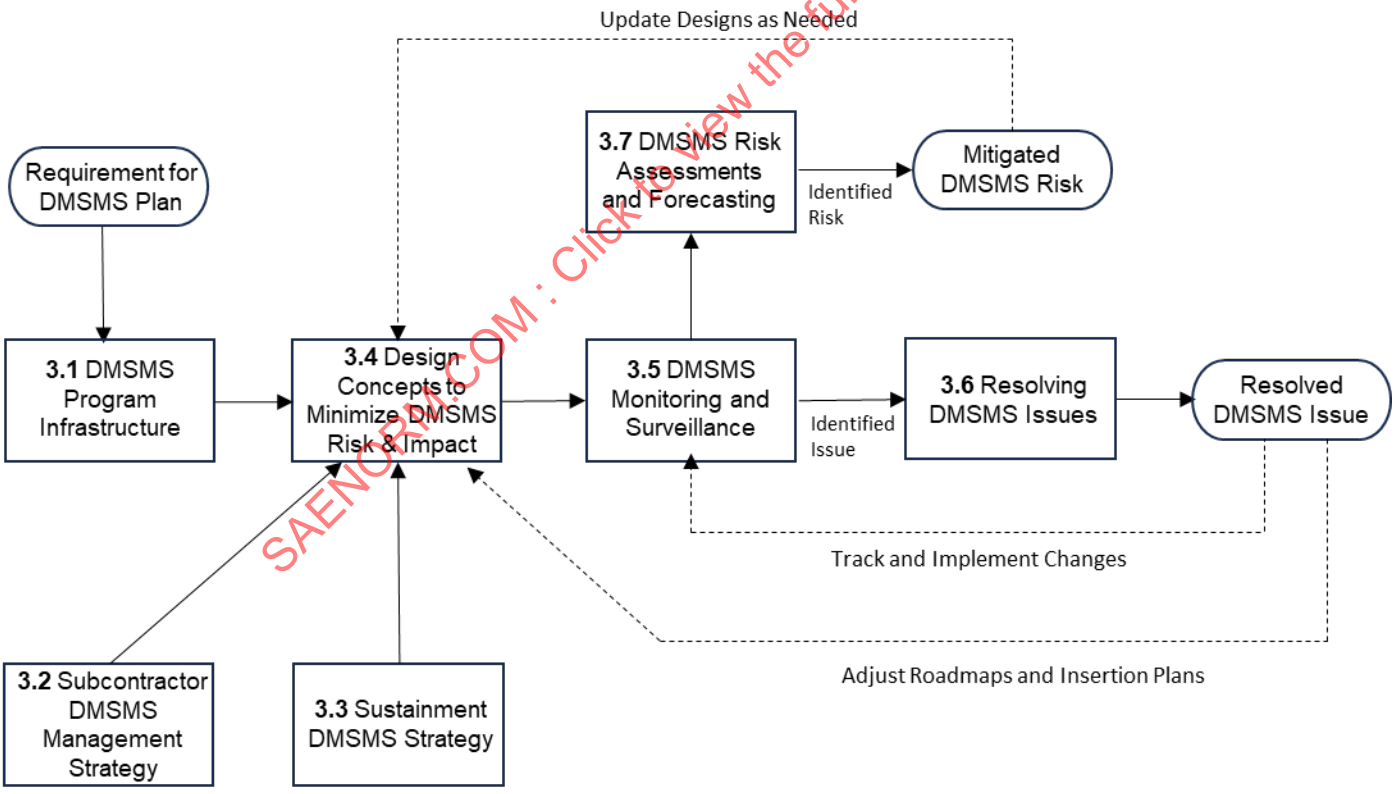


***Figure 1 - Elements of the DMSMS Management Plan***

### 3.1 DMSMS Program Infrastructure

Program infrastructure represents the organizational structure and tools used by the Plan owner to implement the process defined by the DMSMS Management Plan.

The Plan shall identify the organization, hereinafter called the DMSMS Team, used by the Plan owner to manage DMSMS and document the organizational structure and responsibilities of the DMSMS Team and any support organizations that includes the following:

a. Organization/function that acts as the primary customer focal point for the DMSMS Team.

b. Roles and responsibilities of the organizations/functions that comprise the DMSMS Team or provide support to the DMSMS Team.

c. Interfaces to ensure the clear communication of data and information between the DMSMS Team, support organizations, customer, and subcontractor(s) as required.

d. Identification of who has the authority to approve the recommendations developed by the DMSMS Team.

e. Training requirements for the DMSMS Team.

The Plan shall also describe the Data Management System used by the Plan owner to manage obsolescence related information during the execution of the DMSMS Management process documented in the Plan.

The Plan shall include a process to mitigate the risk of counterfeit EEE parts compliant with the requirements of AS5553 or IEC 62668-1 and -2. Counterfeit EEE parts pose an increasing risk to ADHP equipment providers and obsolescence can increase this risk when the Plan owner purchases EEE parts to resolve DMSMS issues, particularly if such purchases are made from non-authorized distributors of EEE parts.

See Appendix C, Section C.1 for additional guidance on how to meet the program infrastructure requirements.

### 3.2 Subcontractor DMSMS Management

The Plan shall document the processes used by the Plan owner to manage DMSMS on equipment provided by subcontractors, if applicable. As a minimum, this shall include the following:

a. Roles and responsibilities of the subcontractor.

b. The DMSMS Management requirements and data items flowed down to the subcontractor.

c. Methodology used by Plan owner to verify subcontractor compliance to DMSMS Management requirements.

NOTE: For the purposes of this standard, a subcontractor is an OEM that is providing equipment to the Plan owner for integration in products the Plan owner provides to customers. Manufacturers of parts and materials are not considered subcontractors for the purposes of this requirement.

Effective DMSMS Management requires all levels of the supply chain to have a process in place to minimize the risk and impact of obsolescence. Flow down of requirements is important. See Appendix C, Section C.2 for additional guidance.

### 3.3 Sustainment DMSMS Strategy

Sustainment is considered activities performed by the Plan owner to provide logistics support for equipment in use by customers, and includes repairs, spares, and warranty support. The Plan shall ensure that the process(es) described in the Plan address sustainment issues and impacts. See Appendix C, Section C.3 for additional guidance on how to meet this requirement.

### 3.4 Design Concepts to Minimize DMSMS Risk and Impact

The Plan shall document the processes and design concepts used by the Plan owner to minimize future occurrence and risk of DMSMS in equipment designs and redesigns. At a minimum, the following shall be addressed:

a. How obsolescence risk is factored in the selection of parts used in equipment design.

b. If programmable parts are used in the design, the Plan shall address processes to ensure parts can still be programmed over the product life cycle. This applies to the programming of parts before installation on circuit card assemblies and the reprogramming of parts after they are installed. This is to ensure that beyond the ability to procure a programmable part, the part as used in the application isn't forced into obsolescence due to the inability to program it.

See Appendix C, Section C.4 for additional guidance on design concepts and strategies that can be used to minimize future DMSMS risk.

### 3.5 DMSMS Monitoring and Surveillance

Monitoring and surveillance is used for notification of potential DMSMS risks and issues. This requires the Plan owner to develop a strategy and approach for how each technology or commodity will be monitored so potential DMSMS risks and issues can be identified as early as possible.

The Plan shall document the process used to monitor parts and materials for EOL and discontinuance notices which shall include the following:

a. The technologies/commodities that are covered by the monitoring and surveillance process.

b. The process used by the Plan owner to determine the monitoring approach for each technology or commodity that is being monitored.

c. Frequency that monitoring occurs.

The Plan shall document the steps the Plan owner takes to process alerts generated by the Monitoring Process to verify that the part or material is obsolete.

The Plan shall also document how the Plan owner notifies customers of DMSMS risks and issues, if applicable.

See Appendix C, Section C.5 for additional guidance on meeting the monitoring and surveillance requirements.

### 3.6 Resolving DMSMS Issues

The resolution of a DMSMS issue entails the selection of a solution (such as using an alternate part or material, a last time buy or a redesign) based on the impact of the issue. Successful resolution also requires tracking the implementation of solutions to completion.

The Plan shall document the process used by the Plan owner to assess the impact of all verified DMSMS issues identified by the Monitoring process (see 3.5).

The Plan shall document the process used by the Plan owner to determine what solution will be chosen to resolve the DMSMS issue which shall include the following:

a. The potential solutions that are considered.

b. How the DMSMS Team evaluates potential solutions.

c. The process for how a solution is selected and approved.

The Plan shall document the process used by the Plan owner to manage/track the implementation of approved DMSMS solutions.

The Plan shall document any metrics collected by the Plan owner to document the benefit or effectiveness of the DMSMS Management program.

See Appendix C, Section C.6 for additional guidance on how to meet the DMSMS resolution requirements.

### 3.7 DMSMS Risk Assessments and Forecasting

Risk assessments and forecasting are the actions taken by the Plan owner to identify future DMSMS risks on their equipment and the steps taken to mitigate risk if needed. The Plan shall document the process used by the Plan owner to perform periodic DMSMS risk assessments on the equipment being monitored and how identified risks are prioritized and mitigated. See Appendix C, Section C.7 for additional guidance on how to meet the risk assessments and forecasting requirement.

## 4. PLAN ADMINISTRATION

### 4.1 Plan Content and Organization

The Plan shall be organized in such a manner that each of the requirements of Section 3 is addressed clearly, concisely, and unambiguously, stating:

a. What the Plan owner does to accomplish each of the requirements.

b. How compliance to the Plan is demonstrated.

c. The evidence that is available to show that the requirements have been accomplished.

A compliance matrix shall be used to document compliance to the Plan requirements. The compliance matrix is provided in Appendix A as an example template that the Plan owner may use to document compliance. All the requirements given in this section apply to deliverable equipment or systems, as stated in 4.4. These requirements may be accomplished by either the Plan owner or may be subcontracted. In either case, the Plan owner is responsible for ensuring all objectives and requirements are met.

The Plan owner may add, delete, or modify requirements in the Plan in response to specific customer requirements. If this is done, the Plan is assessed to the amended requirements.

### 4.2 Plan Focal Point

The Plan shall identify an authority or an organization to serve as the primary interface between the Plan owner and outside parties in matters pertaining to the Plan (see 3.1). The Plan's focal point shall assure that the Plan is reviewed and updated as necessary.

### 4.3 Plan References

The Plan shall include a list of references to all the documents referenced in the Plan, including this document, other industry and government documents, and Plan owner's internal documents.

### 4.4 Plan Applicability

The Plan shall document the range of equipment and/or systems manufactured and/or integrated by the Plan owner to which the Plan applies.

NOTE: The range of equipment is not intended to be a list of part numbers. It may include, for example, the applicable market segment; e.g., "This Plan applies to all equipment manufactured for aerospace applications." It also may include an effectivity date; e.g., "This Plan applies to all new equipment, and to components substituted into existing equipment." The range of equipment also may be limited or required by certain contractual agreements.

### 4.5 Plan Implementation

The Plan owner shall be able to provide objective evidence that the requirements of this document are met, and that the Plan has been implemented.

## 5. NOTES

### 5.1 Revision Indicator

A change bar (l) located in the left margin is for the convenience of the user in locating areas where technical revisions, not editorial changes, have been made to the previous issue of this document. An (R) symbol to the left of the document title indicates a complete revision of the document, including technical revisions. Change bars and (R) are not used in original publications, nor in documents that contain editorial changes only.

PREPARED BY SAE APMC AVIONICS PROCESS MANAGEMENT COMMITTEE

## APPENDIX A - COMPLIANCE MATRIX

Appendix A provides an example matrix the Plan owner can use to document compliance to the requirements of STD-0016. It is not intended to be used by an auditor to verify a plan is compliant to the requirements of STD-0016. For audit or verification, the criteria included in Appendix B should be used.

For each requirement in STD-0016, Table A1 includes a column for the Plan owner to designate the section in their DMSMS Management Plan (DMP) where compliance to the requirement is documented and a column for the Plan owner to list supporting documents if compliance is demonstrated in process(es) included in these other documents instead of directly in the DMP. If the Plan owner's customer has authorized tailoring of specific requirements in STD-0016, then the Plan owner should modify Table A1 to reflect the extent of authorized tailoring.

Table A1, when completed by the Plan owner, only documents compliance to the "shall statements" in STD-0016, Sections 3 and 4.

***Table A1 - Compliance matrix***

| Req No. | STD-0016 Section | Requirement | DMP Reference | DMP Owner Reference or Supporting Document(s) |
|---|---|---|---|---|
| 1 | 3 | The Plan owner shall develop a DMSMS Management Plan, hereinafter called the "Plan," which documents the processes used by the Plan owner to meet each of the requirements in this section. | | |
| 2 | 3 | The Plan shall be maintained, updated, and sustained based on evolving obsolescence management techniques and trends. | | |
| 3 | 3.1 | The Plan shall identify the organization, hereinafter called the "DMSMS Team," used by the Plan owner to manage DMSMS and document the organizational structure and responsibilities of the DMSMS Team and any support organizations that includes the following: (see Req 4-8). | | |
| 4 | 3.1a and 4.2 | Organization/function that acts as the primary customer focal point for the DMSMS Team. | | |
| 5 | 3.1b | Roles and responsibilities of the Organizations/Functions that comprise the DMSMS Team or provide support to the DMSMS Team. | | |
| 6 | 3.1c | Interfaces to ensure the clear communication of data and information between the DMSMS Team, support organizations, customer, and subcontractor(s) as required. | | |
| 7 | 3.1d | Identification of who has the authority to approve the recommendations developed by the DMSMS Team. | | |
| 8 | 3.1e | Training requirements for the DMSMS Team. | | |
| 9 | 3.1 | The Plan shall describe the Data Management System used by the Plan owner to manage | | |

| Req No. | STD-0016 Section | Requirement | DMP Reference | DMP Owner Reference or Supporting Document(s) |
|---|---|---|---|---|
| | | obsolescence related information during the execution of the DMSMS management process documented in the Plan. | | |
| 10 | 3.1 | The Plan shall include a process to mitigate the risk of counterfeit EEE parts compliant with the requirements of AS5553 or IEC 62688-1 and -2. | | |
| 11 | 3.2 | The Plan shall document the processes used by the Plan owner to manage DMSMS on equipment provided by subcontractors if applicable. As a minimum this shall include the following: (see Req 12-14). | | |
| 12 | 3.2a | Roles and responsibilities of the subcontractor. | | |
| 13 | 3.2b | The DMSMS management requirements and data items flowed down to the subcontractor. | | |
| 14 | 3.2c | Methodology used by Plan owner to verify subcontractor compliance to DMSMS management requirements. | | |
| 15 | 3.3 | The Plan owner shall ensure that the process(es) described in the Plan address equipment sustainment issues and impacts. | | |
| 16 | 3.4 | The Plan shall document the processes and design concepts used by the Plan owner to minimize future occurrence and risk of DMSMS in equipment designs and redesigns. At a minimum, the following shall be addressed: (see Req 17-18). | | |
| 17 | 3.4a | How obsolescence risk is factored in the selection of parts used in equipment design. | | |
| 18 | 3.4b | If programmable parts are used in the design, the Plan shall address processes to ensure parts can still be programmed over the product life cycle. | | |
| 19 | 3.5 | The Plan shall document the process used to monitor parts and materials for EOL and discontinuance notices which shall include the following: (see Req 20-22). | | |
| 20 | 3.5a | The technologies/commodities that are covered by the Monitoring and Surveillance process. | | |
| 21 | 3.5b | The process used by the Plan owner to determine the monitoring approach for each technology or commodity that is being monitored. | | |
| 22 | 3.5c | Frequency that monitoring occurs. | | |

| Req No. | STD-0016 Section | Requirement | DMP Reference | DMP Owner Reference or Supporting Document(s) |
|---|---|---|---|---|
| 23 | 3.5 | The Plan shall document the steps the Plan owner takes to process alerts generated by the monitoring process to verify that the part or material is obsolete. | | |
| 24 | 3.5 | The Plan shall also document how the Plan owner notifies customers of DMSMS issues, if applicable. | | |
| 25 | 3.6 | The Plan shall document the process used by the Plan owner to assess the impact of all verified DMSMS issues identified by the monitoring process (see 3.5). | | |
| 26 | 3.6 | The Plan shall document the process used by the Plan owner to determine what solution will be chosen to resolve the DMSMS issue which shall include the following: (see Req 27-29). | | |
| 27 | 3.6a | The potential solutions that are considered. | | |
| 28 | 3.6b | How the DMSMS Team evaluates potential solutions. | | |
| 29 | 3.6c | The process for how a solution is selected and approved. | | |
| 30 | 3.6 | The Plan shall document the process used by the Plan owner to manage/track the implementation of approved DMSMS solutions. | | |
| 31 | 3.6 | The Plan shall document any metrics collected by the Plan owner to document the benefit or effectiveness of the DMSMS Management program. | | |
| 32 | 3.7 | The Plan shall document the process used by the Plan owner to perform periodic DMSMS risk assessments on the equipment being monitored and how identified risks are prioritized and mitigated. | | |
| 33 | 4.1 | The Plan shall be organized in such a manner that each of the requirements of Section 3 is addressed clearly, concisely, and unambiguously stating:<br>a. What the Plan owner does to accomplish each of the requirements;<br>b. How compliance to the Plan is demonstrated; and<br>c. The evidence that is available to show that the objectives have been accomplished. | | |
| 34 | 4.1 | A compliance matrix shall be used to document compliance to the Plan requirements. | | |

| Req No. | STD-0016 Section | Requirement | DMP Reference | DMP Owner Reference or Supporting Document(s) |
|---|---|---|---|---|
| 35 | 4.3 | The Plan shall include a list of references to all the documents referenced in the Plan. | | |
| 36 | 4.4 | The Plan shall document the range of equipment and/or systems manufactured and/or integrated by the Plan owner to which the Plan applies. | | |
| 37 | 4.5 | The Plan owner shall be able to provide objective evidence that the requirements of this document are met and that the Plan has been implemented. | | |

## APPENDIX B - VERIFICATION CRITERIA

Appendix B provides example verification criteria for use during audits to the requirements of STD-0016 when implementation has been required by the Plan owner's customers. It may be used by any organization as guidance for evaluating compliance to STD-0016 which would include internal audits performed by the Plan owner.

The Table B1 checklist contains the STD-0016 section number, the wording of the requirement, a column for documenting whether the plan complies with the requirement, the method of evaluation (MOE) used by the auditor, the record of compliance, and auditor notes. In the event of a conflict between Table B1 and STD-0016, the requirements in STD-0016 apply. In the event that the Plan owner's customers have authorized tailoring of specific requirements of STD-0016, users of Table B1 should modify the table to reflect the authorized tailoring.

The MOEs identified in Table 1 are for guidance only in establishing the methodology for conducting an audit; as such, the MOEs may be modified as deemed appropriate by the auditor. The MOEs are included to structure the audit at the depth necessary to only verify compliance to the requirements in STD-0016, Section 3 and 4, designated as "shall."

***Table B1 - Verification criteria***

| STD-0016 Section | Requirement | Comply? (Y/N) | Method of Evaluation (MOE) | Record of Compliance | Notes |
|---|---|---|---|---|---|
| 3 | The Plan owner shall develop a DMSMS Management Plan, hereinafter called the "Plan," which documents the processes used by the Plan owner to meet each of the requirements in this section. | | Verify that a DMSMS Management Plan was developed and is being used.<br><br>Verify that the Plan includes each of the requirements of 3.1 thru 3.7. | Record the plan title, number, release date, and revision.<br><br>Record scope of plan includes all requirements. | |
| 3 | The Plan shall be maintained, updated, and sustained based on evolving obsolescence management techniques and trends. | | Review objective evidence that the organization is maintaining, updating, and sustaining the plan based on evolving obsolescence management techniques and trends. | Record documented evidence/artifact, such as a revision table. | |
| 3.1 | The Plan shall identify the organization, hereinafter called the "DMSMS Team," used by the Plan owner to manage DMSMS and document the organizational structure and responsibilities of the DMSMS Team and any | | Review objective evidence that the organization has identified and documented the DMSMS team. | Record evidence that a team is identified. | |

| STD-0016 Section | Requirement | Comply? (Y/N) | Method of Evaluation (MOE) | Record of Compliance | Notes |
|---|---|---|---|---|---|
| | support organizations that includes the following: | | | | |
| 3.1a | Organization/Function that acts as the primary customer focal point for the DMSMS Team. | | Verify that the Plan identifies the primary customer focal point for the DMSMS Team. | Record evidence that a responsible organization/focal point is identified. | |
| 3.1b | Roles and responsibilities of the organizations/functions that comprise the DMSMS Team or provide support to the DMSMS Team. | | Verify that the Plan identifies the roles and responsibilities of the DMSMS Team and any supporting members. | Record documented evidence, such as a Responsibility, Accountability, Consult, or Inform (RACI) table. | |
| 3.1c | Interfaces to ensure the clear communication of data and information between the DMSMS Team, support organizations, customer, and subcontractor(s) as required. | | Verify that the Plan has identified communication interfaces. | Record documented evidence of interfaces, such as a swim lane chart. | |
| 3.1d | Identification of who has the authority to approve the recommendations developed by the DMSMS Team. | | Verify that the Plan identifies the organization with authority approval for recommendations developed by the DMSMS team.<br><br>If available, select a sample of approved recommendations and confirm that the organization reviewed and approved. | Record samples of approved recommendations. | |
| 3.1e | Training requirements for the DMSMS Team. | | Verify that:<br>a. The organization has established a training program for the DMSMS Team; and<br>b. Select a sample of relevant personnel and confirm that they have received the required | Record the training program reviewed.<br><br>For required training, record the training reviewed and how records are maintained. | |

| STD-0016 Section | Requirement | Comply? (Y/N) | Method of Evaluation (MOE) | Record of Compliance | Notes |
|---|---|---|---|---|---|
| | | | training. | | |
| 3.1 | The Plan shall describe the Data Management System used by the Plan owner to manage obsolescence related information during the execution of the DMSMS management process documented in the Plan. | | Verify the Plan describes the Data Management System used to manage obsolesce related information.<br><br>If available, select a sample of identified obsolescence related information and confirm it followed the Data Management System. | Record evidence that plan identifies tools and databases used to support the process.<br><br>Record the identified obsolescence related information and the results. | |
| 3.1 | The Plan shall include a process to mitigate the risk of counterfeit EEE parts compliant with the requirements of AS5553 or IEC 62668-1 and -2. | | Verify the Plan has a process for mitigating the risk of receiving counterfeit EEE parts. | Record process document title, number(s), release date and revision.<br><br>Record sample documentation reviewed. | |
| 3.2 | The Plan shall document the processes used by the Plan owner to manage DMSMS on equipment provided by subcontractors if applicable. As a minimum this shall include the following: | | See below. | See below. | |
| 3.2a | Roles and responsibilities of the subcontractor. | | Verify the Plan defines subcontractor roles and responsibilities.<br><br>If available, select a sample of subcontractors and verify that their roles and responsibilities are defined. | Record evidence that the roles and responsibilities of subcontractors are defined.<br><br>Record sample documentation reviewed. | |
| 3.2b | The DMSMS management requirements and data items flowed down to the subcontractor. | | Verify the Plan has a process for developing DMSMS management requirements and Data items for subcontractors. | Record process document title, number(s), release date and revision.<br><br>Record sample documentation reviewed. | |

| STD-0016 Section | Requirement | Comply? (Y/N) | Method of Evaluation (MOE) | Record of Compliance | Notes |
|---|---|---|---|---|---|
| | | | If available, select a sample of subcontractors and verify that their DMSMS management requirements and Data items are defined. | | |
| 3.2c | Methodology used by Plan owner to verify subcontractor compliance to DMSMS management requirements. | | Verify the Plan has a process for verifying subcontractor compliance to the DMSMS management requirements. | Record process document title, number(s), release date, and revision. | |
| 3.3 | The Plan owner shall ensure that the process(es) described in the Plan will meet the requirements of Section 3, including elements to address equipment sustainment issues and impacts. | | Verify Plan has a process that includes the impact to sustainment and support of product in the field.<br><br>If available, sample assessments and verify impact to sustainment and support of product was considered. | Record process document title, number(s), release date, and revision.<br><br>Record sample documentation reviewed. | |
| 3.4 | The Plan shall document the processes and design concepts used by the Plan owner to minimize future occurrence and risk of DMSMS in equipment designs and redesigns. At a minimum, the following shall be addressed: | | Verify Plan documents processes and design concepts to minimize future occurrence and risk of DMSMS in equipment designs/redesigns.<br><br>Also, see below. | Record evidence that the Plan includes design concepts to minimize risk. | |
| 3.4a | How obsolescence risk is factored in the selection of parts used in equipment design. | | Verify Plan has a process for part selection that includes obsolescence risk as a selection criteria.<br><br>If available sample a design or part approval to verify obsolescence was considered during selection. | Record process document title, number(s), release date and revision.<br><br>Record sample documentation reviewed. | |

| STD-0016 Section | Requirement | Comply? (Y/N) | Method of Evaluation (MOE) | Record of Compliance | Notes |
|---|---|---|---|---|---|
| 3.4b | If programmable parts are used in the design, the Plan shall address processes to ensure parts can still be programmed over the product life cycle. | | Verify Plan has a process when using programmable parts to monitor the status of programming software and tools. | Record process document title, number(s), release date, and revision. | |
| 3.5 | The Plan shall document the process used to monitor parts and materials for EOL and discontinuance notices which shall include the following: | | See below. | See below. | |
| 3.5a | The technologies/commodities that are covered by the Monitoring and Surveillance process. | | Verify Plan has a process to identify technologies/commodities being monitored for obsolescence.<br><br>If available, sample an identified technology/commodity to verify it is being monitored. | Record process document title, number(s), release date, and revision.<br><br>Record sample documentation reviewed. | |
| 3.5b | The process used by the Plan owner to determine the Monitoring approach for each technology or commodity that is being monitored. | | Verify the Plan has a process for monitoring the commodities identified in 3.5a.<br><br>If available, sample a commodity identified in 3.5a and verify the process is being followed. | Record process document title, number(s), release date, and revision.<br><br>Record sample documentation reviewed. | |
| 3.5c | Frequency that monitoring occurs. | | Verify the Plan has a process for identifying the frequency of monitoring the commodities identified in 3.5a. | Record process document title, number(s), release date, and revision. | |

| STD-0016 Section | Requirement | Comply? (Y/N) | Method of Evaluation (MOE) | Record of Compliance | Notes |
|---|---|---|---|---|---|
| | | | If available, sample a commodity identified in 3.5a and verify the process is being followed. | Record sample documentation reviewed. | |
| 3.5 | The Plan shall document the steps the Plan owner takes to process alerts generated by the Monitoring Process to verify that the part or material is obsolete. | | Verify the Plan has a process for verifying each alert generated by the monitoring process.<br><br>If available, sample alerts generated by the process and verify the process is being followed. | Record process document title, number(s), release date, and revision.<br><br>Record sample documentation reviewed. | |
| 3.5 | The Plan shall also document how the Plan owner notifies customers of DMSMS issues, if applicable. | | Verify the Plan has a process for notifying customers of DMSMS issues.<br><br>If available, sample customer notifications and verify the process is being followed. | Record process document title, number(s), release date, and revision.<br><br>Record sample documentation reviewed. | |
| 3.6 | The Plan shall document the process used by the Plan owner to assess the impact of all verified DMSMS issues identified by the Monitoring process (3.5). | | Verify the Plan has a process for performing an impact assessment of verified DMSMS issues.<br><br>If available, select a sample of impact assessments and verify process was followed. | Record process document title, number(s), release date and revision.<br><br>Record sample documentation reviewed. | |
| 3.6 | The Plan shall document the process used by the Plan owner to determine what solution will be chosen to resolve the DMSMS issue which shall include the following: | | See below. | See below. | |
| 3.6a | The potential solutions that are considered. | | Verify the Plan has a process to identify and list potential | Record process document title, number(s), release date, and revision. | |

| STD-0016 Section | Requirement | Comply? (Y/N) | Method of Evaluation (MOE) | Record of Compliance | Notes |
|---|---|---|---|---|---|
| | | | solutions considered for resolving DMSMS issues.<br><br>If available, sample potential solutions and verify process was followed. | Record sample documentation reviewed. | |
| 3.6b | How the DMSMS Team evaluates potential solutions. | | Verify the Plan has a process for how solutions are evaluated for each DMSMS issue.<br><br>If available, sample solutions and verify process was followed. | Record process document title, number(s), release date, and revision.<br><br>Record sample documentation reviewed. | |
| 3.6c | The process for how a solution is selected and approved. | | Verify the Plan has a process for selecting a recommended solution, including approval and person with authority to make approval.<br><br>If available, sample recommended solutions and verify process was followed. | Record process document title, number(s), release date, and revision.<br><br>Record sample documentation reviewed. | |
| 3.6 | The Plan shall document the process used by the Plan owner to manage/track the implementation of approved DMSMS solutions. | | Verify Plan has a process for managing and tracking implementation of approved DMSMS solutions.<br><br>If available, sample an implementation of approved DMSMS solutions and verify process was followed. | Record process document title, number(s), release date, and revision.<br><br>Record sample documentation reviewed. | |
| 3.6 | The Plan shall document any metrics collected by the Plan owner to document the benefit or effectiveness of the DMSMS management program. | | Verify the Plan documents metrics collected by the program to show the benefit or effectiveness of the DMSMS management program. | Record process document title, number(s), release date, and revision.<br><br>Record sample documentation reviewed. | |

| STD-0016 Section | Requirement | Comply? (Y/N) | Method of Evaluation (MOE) | Record of Compliance | Notes |
|---|---|---|---|---|---|
| | | | If available, select a sample of metrics and verify they were collected. | | |
| 3.7 | The Plan shall document the process used by the Plan owner to perform periodic DMSMS risk assessments on the equipment being monitored and how identified risks are prioritized and mitigated. | | Verify the Plan has a process to perform periodic DMSMS risk assessments on equipment being monitored.<br><br>If available, select equipment being monitored and verify process is being followed. | Record process document title, number(s), release date and revision.<br><br>Record sample documentation reviewed. | |
| 4.1 | The Plan shall be organized in such a manner that each of the requirements of Section 3 is addressed clearly, concisely, and unambiguously stating:<br>a. What the Plan owner does to accomplish each of the requirements;<br>b. How compliance to the Plan is demonstrated; and<br>c. The evidence that is available to show that the objectives have been accomplished. | | See Section 3. | See Section 3. | |
| 4.1 | A compliance matrix shall be used to document compliance to the Plan requirements. | | Verify the Plan includes a compliance matrix for documenting compliance to the Plan requirements.<br><br>If available, sample a compliance matrix to verify process was followed. | Record process document title, number(s), release date, and revision.<br><br>Record sample compliance matrix reviewed. | |

| STD-0016 Section | Requirement | Comply? (Y/N) | Method of Evaluation (MOE) | Record of Compliance | Notes |
|---|---|---|---|---|---|
| 4.2 | The Plan shall identify an authority or an organization to serve as the primary interface between the Plan owner and outside parties in matters pertaining to the Plan (see 3.1). The Plan's focal point shall assure that the Plan is reviewed and updated as necessary. | | See 3.1a. | See 3.1a. | |
| 4.3 | The Plan shall include a list of references to all the documents referenced in the Plan. | | Verify Plan lists all documents referenced in Plan.<br><br>If available, select a sample of documents and confirm that they are listed in the Plan. | Record sample documentation reviewed. | |
| 4.4 | The Plan shall document the range of equipment and/or systems manufactured and/or integrated by the Plan owner to which the Plan applies. | | Verify in the Plan documents the range of equipment and/or systems to which the Plan applies.<br><br>If available, select a sample of equipment and/or systems and verify they are included in the Plan. | Record sample documentation reviewed. | |
| 4.5 | The Plan owner shall be able to provide objective evidence that the requirements of this document are met and that the Plan has been implemented. | | See Section 3. | See Section 3. | |

# APPENDIX C - GUIDANCE

The purpose of this appendix is to provide guidance on how a Plan owner can meet the requirements in Section 3. For each requirements section, the appendix includes additional clarification and examples of the type of information a Plan owner can consider when developing their Plan. The guidance provided in this appendix should not be considered as additional requirements or a mandatory way to meet the requirements in this standard.

For additional guidance on DMSMS/obsolescence management strategies and processes, refer to SD-22. For guidance on obsolescence management throughout a supply chain, refer to IEC 62402.

## C.1 GUIDANCE FOR PROGRAM INFRASTRUCTURE

Program infrastructure represents the organizational structure and tools used by the Plan owner to implement the processes defined by the DMSMS Management Plan. The requirements in 3.1 represent how the Plan owner implements its DMSMS management process and uses tools and databases to support its execution. The guidance in this section focuses on how those requirements can be met. For additional guidance on establishing DMSMS Management Program Infrastructure, refer to Section 3 of SD-22, and for guidance on establishing an obsolescence management infrastructure and organization, refer to clause 6 of IEC 62402.

### C.1.1 Organizational Structure and Interfaces

The Plan has a requirement in 3.1 of this standard for identifying the team used by the Plan owner to manage DMSMS. The team can be given any title or name by the Plan owner, but, for the purposes of this standard, the term “DMSMS Team” is used to represent the team. It is recommended that the DMSMS Team be multifunctional and include representation from, but not limited to, the functions listed below:

a. Engineering

b. Procurement

c. Product Support/Logistics

d. Manufacturing/Operations

e. Contracts/Legal

f. Finance/Cost Accounting

g. Quality Assurance

h. Configuration Management

i. Program Management

The composition of the team may change during the program or product life cycle. Due to the nature of the type of activities performed by the DMSMS Team, there may be some functions that engage in most team activities, while other functions are rarely involved. As one example, the Plan may choose a team structure, consisting of a core DMSMS Team supported by other functions as needed. Internally, the Plan owner may adopt a structure where a single DMSMS Team supports all programs of the Plan owner or a structure where there are multiple DMSMS Teams, one for each of the Plan owner’s programs. Either is acceptable for meeting the requirements in this standard and this should be documented in the Plan. Additional guidance on DMSMS Team-related considerations for documentation in a plan and forming a DMSMS Team can be found in Section 3 of SD-22. Clause 6 of IEC 62402 also provides guidance on creating an obsolescence management team.

As specified in 3.1a, the standard requires the Plan to identify the function or organization that leads the DMSMS Team. The leadership of the DMSMS Team may change during the life cycle of a program. For example, engineering may be responsible for leading the team during production with leadership switching to logistics once production is completed. Such shifts in leadership should be documented in the plan. If leadership of the DMSMS Team is shared between multiple functions, then this should also be noted in the plan. Requirement 3.1d also requires the Plan to document what organization or role has the approval authority for DMSMS solutions. Like the leadership role, it is possible that this authority may change during the life of the program or be shared amongst multiple roles. In this case, this should be documented in the Plan.

The DMSMS Team is responsible for implementing the process defined in the DMSMS Management Plan. To achieve this, a robust DMSMS Management Program should have adequate initial and sustained funding and resources to develop and implement processes to meet Section 3 requirements. This should cover process elements at the start of the program and continuing throughout the program life cycle and should also address the implementation of solutions to identified DMSMS risks and issues. Additional guidance on documenting funding and resources in a Plan and securing resources for DMSMS management operations is detailed in Section 3 of SD-22. Guidance on programming and budgeting for DMSMS resolutions is also detailed in SD-22, Section 7.

In addition to listing each function or organization in the DMSMS Team, requirement 3.1b states the Plan owner defines and documents the responsibilities of each function or organization. The recommended approach is for the Plan owner to document this using their standard methodology for defining roles and responsibilities in other process documents or plans. If the Plan owner does not have a standard methodology, there are several possible methods for documenting roles and responsibilities, one of which would be to use a list or tabular form, as shown in the example below.

***Table C1 - Example table for DMSMS responsibilities***

| Task | DMSMS Team | Design Engineering | Logistics | Purchasing | Manufacturing |
|---|---|---|---|---|---|
| Maintain Database | **L** | **X** | | | |
| Develop Subcontractor DMSMS SOW | **X** | **X** | **X** | **L** | **X** |
| Design for Obsolescence | **X** | **L** | | | |
| Roadmap Development | **X** | **L** | **X** | | **X** |
| Develop Monitoring Strategy | **L** | | | **X** | |
| Monitor BOM | **L** | | | **X** | |
| DMSMS Impact Assessment | **X** | **L** | **X** | | **X** |
| DMSMS Resolution | **L** | **X** | **X** | **X** | **X** |
| Manage Last Time Buy Process | **X** | | | **L** | |
| DMSMS Case Management | **L** | | | **X** | |
| DMSMS Risk Assessments | **L** | **X** | **X** | | **X** |

Notes:
"L" indicates lead role in task.
"X" indicates participant in task.



For a more detailed approach, the Plan owner may consider using a Responsibility, Accountability, Consult, or Inform (RACI) table. A RACI table is similar to the example in Table C1 but has a more detailed definition of the specific roles team members have in the process. Section 3 of SD-22 contains an example RACI chart that can be used for reference. Another alternative to consider is a swimlane chart which is a process-flow diagram that also maps out the role(s) responsible for completing each step of the process flow. Consult other sources (e.g., internet, project management workshops, and guidebooks) for more detailed information on RACI tables, swimlane charts and other possible methods for documenting roles and responsibilities.

To document critical program interfaces (requirement 3.1c), an organizational chart or a swimlane chart can be used to document the interfaces between the various groups that support the program. A process-flow diagram that shows the interfaces between the groups during each step of the process can also be used.

Requirement 3.1c also requires the plan to address the level of customer participation on the team. This is usually defined by the requirements of the contract between the Plan owner and the customer and thus would not be known prior to a contract being in place. For a plan being developed after a customer contract is in place, the Plan should define the customer role based on the contract requirement. For a plan being written when there is no specific customer contract in place, the Plan should include the “default” customer participation level that the Plan owner allows in the absence of a specific contract requirement. Some areas where the customer role should be defined include:

a. Whether the customer is part of the Plan owner DMSMS Team.

b. The customer role in approving DMSMS solutions proposed by the Plan owner DMSMS Team.

If the customer is not a member of the Plan owner’s DMSMS Team, an alternative method for customer participation can be the creation of a joint Plan owner/customer team that focuses on strategic issues, rather than the day-to-day operations of the DMSMS Team. This joint team could also have solution approval responsibility since it has representation from the customer and the Plan owner.

To meet the 3.1e training requirement in the standard, the Plan owner should document its training requirements for DMSMS Team members in the Plan. This should include internal training developed and administered by the Plan owner and external training provided by other sources. Training can include formal classes or courses or more informal means such as presentations, desk instructions, or tip sheets. The Plan should also include how the completion of training by DMSMS Team members will be tracked by the Plan owner. If there are no formal training requirements for DMSMS Team members, then this should be stated in the Plan.

C.1.2 Data Management System

The Data Management System represents the tools and databases used by the Plan owner to support implementing the processes described in the Plan. Tools and databases play a key role in the overall process and effective tool usage provides a high level of confidence that DMSMS issues are being identified, addressed, and tracked. Tools and databases covered in the Plan should include those internally developed, as well as any purchased from a third party. There are many different types of tool capabilities and below are examples that the Plan owner can use for DMSMS management:

a. Monitor BOMs to provide notification when an item is discontinued.

b. Carry out technology surveillance/roadmaps using DMSMS Risk Assessments and End of Production (EOP) forecasts to provide Plan owner insight on potential obsolescence risks requiring mitigation.

c. Identify and compare potential alternate or substitute parts for a known obsolete part.

d. Provide current obsolescence status on a part to support the part selection process.

e. Perform a business case analysis for evaluating DMSMS solutions.

f. Track status on approved DMSMS solutions until they are successfully implemented and holding these case histories.

g. Provide inventory, demand, and field reliability information to help calculate item quantity requirements to support last-time buys or for tracking consumption of last-time buy inventory.

h. Provide maintenance and support data for assessing the potential sustainment impact of a DMSMS issue on depot and product support.

i. Calculate cost avoidance metrics to help measure the effectiveness of the DMSMS Management process using Plan owner methodology or the cost avoidance metrics defined in SD-22.

For additional guidance on identifying and procuring monitoring and surveillance tools refer to SD-22, Section 4.

C.1.3 Counterfeit EEE Parts Risk Mitigation

Counterfeit EEE parts pose an increasing risk to ADHP equipment providers. Counterfeits can include totally nonfunctional devices which would cause equipment to fail or operate incorrectly in the field, used or recycled parts that could fail earlier than predicted, and tampered devices which contain features that could allow an adversary to control the device during operation. The inadvertent use of counterfeit EEE parts can impact performance, reliability, and safety of ADHP equipment that integrates these parts. Disruptions in the global EEE part supply chain and imbalances in supply and demand of EEE parts contributes to the prevalence of counterfeit devices being sold on the open market.

DMSMS poses additional risks to the Plan owner in regard to counterfeit EEE parts. EEE part DMSMS issues are oftentimes resolved through the purchase of the DMSMS EEE part using a lifetime buy/life of need buy or a bridge buy. In some cases, these procurements can be made with the original component manufacturer or an authorized distributor which minimizes the potential risk of counterfeit EEE parts. However, when a part has been discontinued for an extended period of time, the only available inventory may be held by a source which obtained the part from non-authorized distribution. Procurement from these sources does increase the risk of obtaining counterfeits which makes it critical that the Plan owner have a process in place to mitigate such risks.

The recommended approach for meeting the requirement in 3.1 is for the Plan owner to develop a Counterfeit EEE Parts Control Plan that complies with the requirements in AS5553 or IEC 62668-1 and -2. It is not necessary to include all of the processes that are part of the Plan owner's Counterfeit EEE Parts Control Plan in the DMSMS Management Plan. A reference to the Plan owner's existing plan is sufficient to meet the requirement.

For additional guidance on counterfeit EEE part risk mitigation, refer to AS5553 and ARP6328, or IEC documents 62688-1 and -2.

C.2 GUIDANCE FOR SUBCONTRACTOR MANAGEMENT

Effective DMSMS management requires that all levels of the supply chain have a process in place to minimize the risk and impact of DMSMS. If the Plan owner purchases equipment designed and/or fabricated by other suppliers which is then integrated in its products for customers, the Plan owner is responsible for ensuring that the customer DMSMS management requirements are flowed down and implemented by these suppliers.

If the Plan owner has no subcontractors providing items for integration into its products for customers, then the requirements in 3.2 are not applicable and this is stated in the Plan.

Per requirement 3.2a of the standard, it is the responsibility of the Plan owner to define the DMSMS management roles and responsibilities of subcontractors. These roles should be consistent with the Plan owner's standard strategy for managing subcontractors, modified by any customer-specific requirements, if applicable. A Plan owner may also decide to have different roles and responsibilities flowed down to subcontractors, depending on their work statement. For example, if a Plan owner has a build-to-print subcontractor that assembles equipment designed by the Plan owner, the DMSMS management responsibilities for this subcontractor may be different from a subcontractor that is responsible for designing and building a piece of equipment. Regardless of the strategy chosen, the Plan owner is required to document that strategy in the plan, per 3.2a.

The Plan should define who is responsible for key DMSMS Management tasks that includes:

a. Monitoring items for obsolescence on subcontractor designed equipment.

b. Performing the analysis work to determine a recommended solution to a DMSMS issue.

c. Approving solutions for known DMSMS issues.

d. Authority to implement solutions without the Plan owner's input.

Additionally, the Plan should define how information is communicated between the subcontractor and the Plan owner. This is critical if subcontractors are given the responsibility for performing key tasks, such as DMSMS monitoring and resolving identified DMSMS issues. Establishment of any joint Plan owner-subcontractor DMSMS Team(s) to facilitate communication should be defined if necessary. Any data or reports required by the Plan owner should be included in the requirements or in a data item deliverable.

Requirement 3.2b of the standard requires the Plan to describe the DMSMS management requirements and data items flowed down to subcontractors. Specific requirements will depend on the responsibilities assigned to the subcontractor but should include any tasks that the Plan owner expects the subcontractor to perform to fulfill Plan requirements. It is recommended that the Plan owner have a standard template for DMSMS language that can be tailored based on the specific customer requirements. The DMSMS management requirements should be included in the statement of work (SOW) that the Plan owner provides the subcontractor.

In determining data items to flow down to subcontractors, the Plan owner should ensure that any data in the possession of the subcontractor that is needed to meet their customer requirements is being requested. For example, if the customer requires a BOM submittal, then subcontractors providing equipment should be required to submit a BOM to the Plan owner so it can be provided to the customer. The Plan owner should perform a thorough review of the customer's data requirements (if applicable) before the Plan owner defines the data items required of its supply chain. Potential data items that should be considered by the Plan owner include:

a. Indentured bill of material (BOM) or parts list (PL). The Plan owner should specify whether BOM/PL data will be required to be submitted in a specific format. This could be per a standard format, such as DI-MGMT-82274, or the Plan owner's standard format. The data item should also define how and when updated BOM/PL information will be provided in the future.

b. DMSMS Management Plan that describes the process(es) used by the subcontractor to meet SOW requirements.

c. Notification of DMSMS Issues identified by the subcontractor. The Plan owner may also differentiate between issues that require immediate notification and those that can be submitted at a later date.

d. DMSMS reports that provide status on the DMSMS program, such as risk assessments, DMSMS process metrics, and results of DMSMS design reviews.

e. DMSMS trade studies for resolving identified DMSMS issues.

f. Status on implementation of approved DMSMS resolutions to support case management.

g. Status on lifetime-buy inventory being held at the subcontractor's facility or at a third party contracted by the subcontractor. This should include parts/materials purchased by the subcontractor or those purchased by the Plan owner for storage at the subcontractor facility.

h. Resolution costs for solutions implemented by the subcontractor.

It is recommended that standard data items be developed by the Plan owner so consistent requirements are flowed to the supply chain. The Plan does not have to include the exact DMSMS requirement flow down language, DMSMS SOW wording, or data item language flowed down to subcontractors. Reference to Plan owner documents that contain this information is sufficient to meet this requirement. For additional guidance on establishing supporting contracts for DMSMS management operations support and data, refer to Section 3 of SD-22.

Requirement 3.2c in the standard requires the plan to describe the process or methodology used by the Plan owner for verifying subcontractors have processes in place to comply with the requirements flowed down to them. The following are some methods that may be used to verify subcontractor compliance. Note that a combination of methods can be used to verify compliance.

a. Plan Review: The Plan owner may review and approve a submitted DMSMS Management Plan or other documentation provided by the subcontractor showing compliance to the requirements. For these reviews, the compliance matrix and verification criteria in Appendix A and B of this standard can be used to assist reviews. The compliance matrix and verification criteria can be tailored and documented as such in the Plan if the requirements flowed down to the subcontractor differ from those in this standard.

b. Audit: The Plan owner may perform an audit of the subcontractor facility to review and approve the processes identified by the subcontractor to meet the requirements.

c. Third Party Certification: The Plan owner may accept a certification from a third-party organization that audits suppliers to verify processes are in place that meet the requirements of a specific standard. This approach would only be acceptable if the criteria being used by the third party is sufficient to meet the Plan owner's requirements.

d. Other Criteria: Other criteria as determined by the Plan owner and documented in the Plan.

The plan should also describe how the Plan owner documents subcontractor compliance to the requirements. Typically, compliance to DMSMS requirements is documented in the same system the Plan owner uses for other plans submitted by subcontractors.

## C.3 GUIDANCE FOR SUSTAINMENT STRATEGY

Sustainment is considered activities performed by the Plan owner to provide logistics support for equipment in use by customers and includes repairs, spares, and warranty support. The processes included in the plan to comply with the requirements of this standard have to address the potential impact on sustainment. Reducing the total life cycle costs of DMSMS requires solutions and risk assessments to consider both the impact that issues have on production and sustainment. Focusing only on the production program will only provide a partial solution to DMSMS issues and risk.

The sustainment strategy defined by the Plan owner is shared with the DMSMS Team so the processes described in the plan can address the impact DMSMS will have on sustainment. If the Plan owner has no responsibility for sustainment, then this is documented in the plan and the requirement in 3.3 is not applicable.

To provide evidence that the DMSMS Management process addresses sustainment, the Plan owner should consider the following in the development of the DMSMS Management Plan.

a. Include representation from logistics or product support on the DMSMS Team.

b. Impact assessments include the impact to the production line and the impact to logistic support of equipment containing the DMSMS item in the field.

c. One of the factors for evaluating DMSMS resolutions is the impact that the solution has on sustainment. For example, a redesign of a subassembly will need to assess the impact of sustaining multiple configurations of the subassembly in the field.

d. Lifetime buys or bridge buys include quantities to support both production and sustainment.

e. Risk assessments include forecasting "end of support" dates where equipment can no longer be sustained due to DMSMS issues.

f. Include the Program Sustainment Plan or Logistics Support Plan as reference documents in the DMSMS Management Plan.



## C.4 GUIDANCE FOR DESIGN CONCEPTS TO MINIMIZE DMSMS RISK AND IMPACT

DMSMS impacts a system over the entire life cycle. To reduce this impact, the Plan owner, per requirement 3.4, documents steps taken during the equipment design or equipment redesign process to minimize DMSMS risk and impact on life cycle costs. This approach reduces the likelihood of DMSMS problems in the near term, but, more importantly, provides a framework that allows future DMSMS problems to be resolved more efficiently and with less impact on the overall design. The strategies and concepts used apply to initial equipment design and redesigns throughout the equipment's life cycle.

There are numerous design strategies that can have a positive effect on reducing DMSMS risk and impact. However, not all of these strategies may be relevant for the equipment provided by the Plan owner, and they may also provide benefits to the Plan owner in areas other than DMSMS Management. Thus, none of these strategies will typically be deployed solely for the benefit of DMSMS Management. Since these strategies or design concepts may be standalone processes documented by the Plan owner in other plans or documents, it is not necessary to include the entire content of these documents in the DMSMS Management Plan. References can be made to these documents, but enough detail should be included in the DMSMS Management Plan to provide objective evidence that a customer can use to verify that the requirement is being met.

Requirement 3.4 lists some items that need to be addressed in the plan. These items were chosen based on the potential negative impact that they can have on obsolescence if not addressed during the initial design stages of the program. The following is guidance for addressing these items:

a. Part Selection**:** Including obsolescence risk as a criteria for part selection can benefit the Plan owner by avoiding the selection of obsolete parts or those predicted to go obsolete in the near future so they do not have the opportunity to impact production schedules or system availability. Utilizing the capabilities of DMSMS tools can assist in identifying at risk parts, but information such as life cycle code ratings or predictions on when a part will be discontinued should be made available to equipment designers so they can take advantage of this information during design. Including this type of information in design tools can provide designers with this key information. Having an obsolescence check as part of the new part approval process is also recommended. If the Plan owner uses a preferred or standard parts list, it should periodically review these lists for obsolescence. These processes are normally included in an Electronic Component Management Plan (refer to SAE-EIA-STD-4899 and IEC 62239-1).

b. Programmable Devices: When using programmable devices, the Plan owner is considering the potential obsolescence risk of the part and the ability to program the part in the future. Both of these need to be available for the programmable part to be supported. The Plan owner will develop a strategy that will ensure the availability of the part and the programming software/hardware. Typically, the monitoring process defined in requirement 3.5 will be used to track the availability of the part, but the ability to program the part is not something tracked by automated monitoring tools. It is recommended that the Plan owner contact the programmable part manufacturer periodically to verify the availability of programming software and any other required items needed to program the parts. Working with the manufacturer to obtain information on the long-term roadmap for the programming software can also be used to assess risk of whether the software will become a DMSMS issue. This could become an issue if the Plan owner performs a lifetime buy on a programmable part and thus will have inventory that will be programmed long after the manufacturer has stopped production of the part.

The following is a list of design strategies and concepts that may be used by the Plan owner, in addition to the mandatory elements to minimize the occurrence and risk of DMSMS in the future. This list should be tailored, as appropriate, by the Plan owner. Included is guidance on how these strategies and concepts could be implemented by the Plan owner. For additional guidance on interfaces that can be established to advocate for DMSMS resilient designs, refer to Section 3 of SD-22. Also refer to clause 8 of IEC 62402 for guidance on strategies that can be used to minimize obsolescence during design.

a. Equipment Roadmaps/Technology Insertion Plans: Obtaining or developing roadmaps for equipment to account for product evolution during program production and post-production phases reduces the impact of DMSMS. These roadmaps can assist in developing the technology insertion strategy and also in resolving DMSMS issues by providing clearly defined points that the solution must support. Roadmaps are utilized to review technology insertion plans and potential redesigns, or bridge buys used to address DMSMS issues or risks to ensure they are compatible with the roadmap.

b. Parts and Materials Roadmaps**:** Similar to equipment roadmaps, the Plan owner can develop or obtain the projected technology evolution or roadmap for critical parts and materials. This information can be used by the design team and the DMSMS Team to accommodate the evolution of the part or material without the requirements for significant redesign or to align future redesigns with the equipment roadmap. A risk assessment should be performed to identify the critical parts and materials that may need roadmap development. Developing these roadmaps will usually require collaboration with the manufacturer of the part or material.

c. Open Systems Architecture: Using open-systems architecture maximizes the flexibility to implement DMSMS solutions due to the partitioning, common interfaces, and modularity characteristics of an open system. This enables DMSMS to be addressed at the module, SRU, and LRU level as appropriate which can reduce the impact that redesigns have on the entire system. An open-systems architecture also assists in the development of Technology Insertion Plans (see C.4.a Equipment Roadmaps/Technology Insertion Plans) and the success of a COTS assembly strategy/roadmap.

d. Software Design Approaches: System design should also consider the impact that hardware changes driven by DMSMS issues will have on software. Isolating application software from the operating system and not making software dependent on a particular hardware configuration can increase software portability which minimizes impact of processor changes. If COTS software is used, it is recommended that a software DMSMS management process for tracking and monitoring the status of this software be developed.

e. COTS Hardware/Assembly Management: COTS assemblies pose unique challenges due to the lack of design knowledge and configuration control by the user. Development of a COTS Assembly Management Plan, per EIA-933 or IEC TS 62239-2 can help reduce risk since these standards include requirements for mitigating the risk and impact of item and assembly obsolescence. A common approach for COTS selection is to create a checklist that includes items specific to obsolescence management such as:

1. Does the COTS manufacturer have an obsolescence management process?

2. Does the COTS manufacturer have a product roadmap that can be shared? Does this include end-of-production forecasts and end-of-support dates for the COTS assembly?

3. Does the COTS manufacturer provide EOP notifications to customers?

4. Is a BOM of the COTS assembly available to customers?

5. Does the COTS manufacturer support aftermarket manufacturing of their product?

This information is usually obtained from COTS manufacturers using a survey, Request for Information (RFI), or technical interchange meetings. There are existing surveys or checklists that have been created for this purpose. For example, the VMEbus International Trade Association (VITA) developed VITA standard 53.0 as a means for high reliability users of COTS to communicate to COTS manufacturers what product roadmap and end-of-life notice information is needed to minimize total life cycle costs and DMSMS risk when using COTS. While this standard is written for the VMEbus user community, the questions in VITA 53.0 could be tailored for communicating with manufacturers of non-VME hardware. The DoD COTS Critical Electronic Assembly Selection Checklist is another example of a comprehensive survey that can be used or tailored as needed for the specific Plan owner application.

When obtaining product roadmap information, it is important for the DMSMS Team to compare this to the roadmap of the equipment into which the COTS item is being integrated. If these are not aligned, changes may be needed to the equipment roadmap or some risk may need to be accepted since the Plan owner is unlikely to have any influence on modifying the COTS roadmap. Obtaining this type of information during the COTS selection process enables the Plan owner to better assess the potential DMSMS risk of using COTS assemblies and also develop mitigation strategies if needed.

The Plan owner may also consider investigating the use of services that monitor COTS electronic assemblies similar to how EEE parts are monitored. Some of the tools/databases monitoring EEE parts also include information on COTS electronic assemblies.

f. Design Capture of Critical Parts: Define the criteria used to determine when behavioral models are used to capture critical elements of the design to allow them to be transportable to different technologies in the future. For equipment provided by subcontractors, consider purchasing the design rights to facilitate the ability to transport the design. This will minimize redesign costs in the future, particularly if the organization performing product support differs from the OEM.

g. High Reliability Designs: DMSMS risk is reduced when system designs have designed in reliability. High reliability modules or assemblies that seldom fail and have a support strategy identified will reduce the impact of DMSMS on sustainment. Reliability design begins with the development of a model to provide a means of evaluating the relationships between different parts of the system. This model is critical during sustainment to determine impact of replacing the original parts with alternate or substitute parts and also during equipment redesigns.

h. DMSMS Assessments at Design Reviews: Including a DMSMS assessment as part of design reviews, such as the Preliminary Design Review, Critical Design Review, or Technical Interchange Meetings, is a method for verifying that design concepts required by the Plan are being followed. For example, design reviews can be used to verify the development of equipment and part/material roadmaps for critical items. BOM reviews for procurement status and potential obsolescence risk can be shown to validate the part selection process is screening parts for obsolescence risk. These reviews can also be used to review evidence that the monitoring and resolution processes are also implemented.