Strategic DMSMS Management: Tighter Integration with Systems Engineering

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Perspectives on Management of Diminishing Manufacturing Sources and Material Shortages (DMSMS)

Types of DMSMS Management

Cost Avoidance, Readiness, and Maintaining Schedule

Reactive

Risk-Based Proactive

Strategic
Reactive DMSMS Mitigation vs Proactive DMSMS Management

• Reactive -
  – Wait until you can’t buy it and then deal with the problem
  – There is a higher potential impact on Operational Availability
  – You have a brief window of opportunity to address DMSMS issues
  – Typical solution costs higher and options more limited

• Proactive -
  – Monitor parts in order to determine DMSMS early to influence tech refreshes or minimize impacts
  – Apply risk based approach
  – You potentially reduce impacts on Operational Availability
  – There is a longer window of opportunity to address DMSMS issues
  – Typical solution costs are lower and more options are available
Elements of Strategic DMSMS Management

- Augments proactive DMSMS management by:
  - Designing for DMSMS
    - Avoid designing in obsolescence altogether
    - Delay the occurrence of DMSMS issues if they cannot be prevented
    - Further increase the likelihood of identifying low-cost options to resolve DMSMS issues that do occur
  - Applying an integrated approach to future system modification planning that prevents DMSMS issues from occurring where possible
  - Pursuing resolutions to cross-cutting DMSMS issues with potentially high impact on readiness or cost

The future BEST PRACTICE for DMSMS Management
Design for DMSMS

- Avoid designing in obsolescence altogether or

- DMSMS issues can be delayed by applying robust parts selection criteria, such as:
  - Standardized parts
  - High reliability with multiple (and preferably domestic) sources
  - Parts are early in the life cycle of the underlying technology
  - Of course, not already obsolete or counterfeit
  - Application
  - Cost-benefit analysis
  - Qualification test data or past performance data
  - Compliance with contract performance requirements
  - Technical suitability
  - Government life-cycle cost optimization
Increase the Likelihood of Identifying Low-Cost Options for Solutions

- Design to enable substitution of readily available alternatives or upgrades
  - Use a Modular Open System Approach to design for software and hardware
  - Judiciously use commercial off-the-shelf (COTS) assemblies or COTS software in design
    - Assess the risk and suitability of using COTS assemblies or software in design
    - Avoid modification of COTS assemblies or software without careful consideration of implications and alternatives
  - Obtain the technical data necessary to verify and validate the resolutions
  - Avoid the use of hazardous or exotic materials
**Integrated Approach to Modification Planning**

- Replace obsolete items before they can no longer be purchased
- Develop and execute a modification plan that encompasses:
  - Capability enhancement based on pre-planned improvements or new operational requirements
  - Supportability improvement based on affordability – The need to identify and reduce the highest Operations and Support cost drivers
  - Safety enhancement based on deficiencies discovered in operational use
  - Service life extension efforts based on the need to maintain a capability for a longer period of time
  - Statutory and regulatory change based on new requirements to address, for example, environmental or security concerns
  - **Technology refreshment based on technology trends and roadmaps and known/anticipated obsolescence**
Pursue Resolutions to Cross-Cutting DMSMS Issues

- Coordinate across programs and Services to identify and address cross-cutting DMSMS issues
- Coordinated/centralized efforts to manage and fund DMSMS solutions:
  - Reduce cost, schedule, and readiness impacts
  - Avoid pitfalls of previous attempts
  - Take deliberate, consensus based approach where next steps based on specific results
    - Service leads identify high interest opportunities
    - Form consensus on “test case” to prove principle and overcome barriers
      - Resolutions may be required at different times
      - Operating environments and other requirements may drive different resolutions
    - Jointly develop common approach to extent feasible
    - Seek implementation funding
Conclusion

- DMSMS is inevitable
- Take a strategic approach to DMSMS management
- Ensure that Parts and DMSMS Management is effectively integrated into the Acquisition Strategy, Systems Engineering Plan, and Life Cycle Sustainment Plan
- Form and empower Parts and DMSMS Management Teams and Strategies
- Establish contract requirements for original equipment manufacturers and Primes that require robust Parts and DMSMS management best practices that are flowed down the supply chain
- Start DMSMS management before Preliminary Design Review to enable influence of the design and parts selection
- Ensure that the necessary technical data along with the needed rights to the data are purchased
- Integrate DMSMS Health Assessments into planning
- Gain efficiencies by solving issues together
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