



21st Annual National Defense Industrial Association
Systems and Mission Engineering Conference

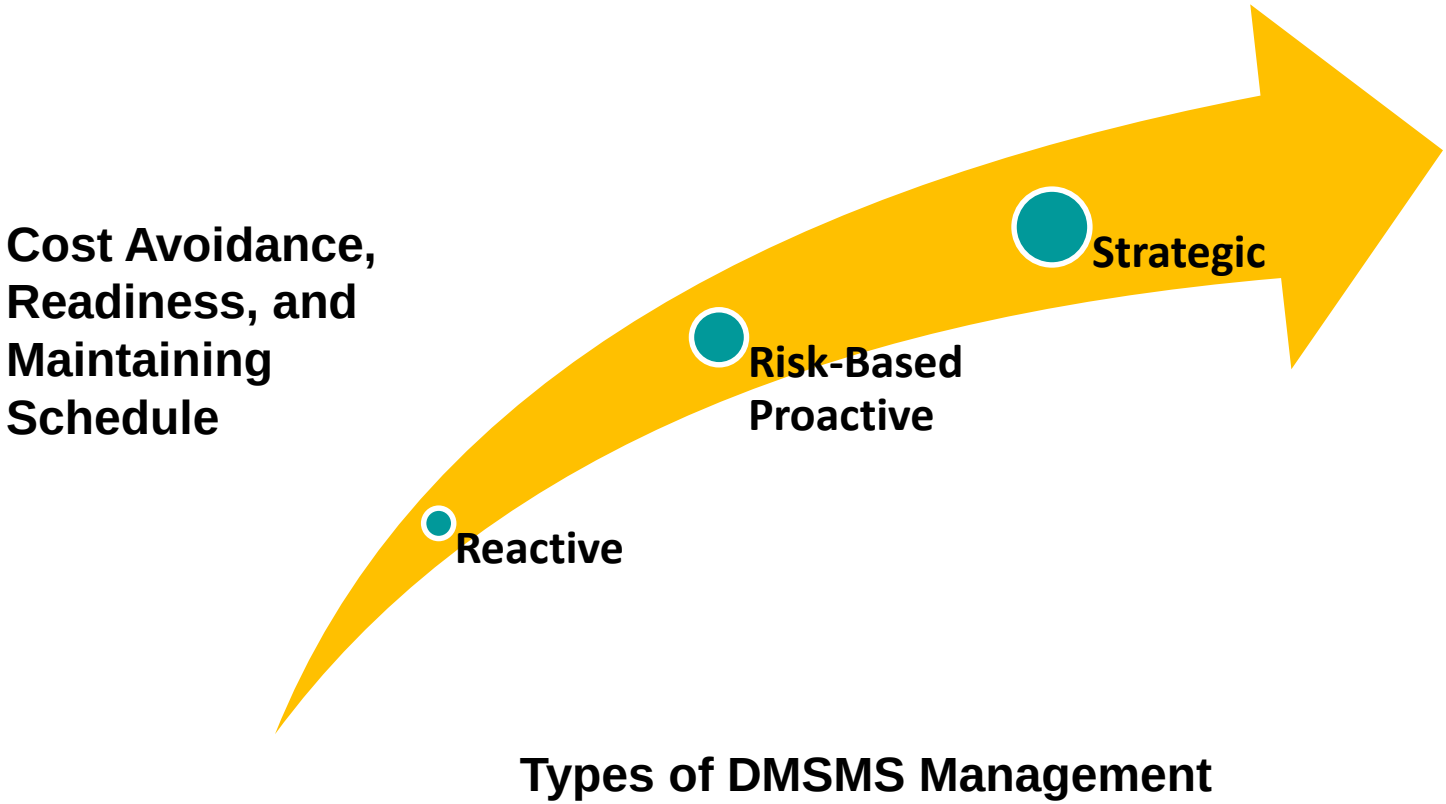
Strategic DMSMS Management: Tighter Integration with Systems Engineering

Robin Brown

Office of the Under Secretary of Defense for
Research and Engineering

October 25, 2018

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



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

DoD Research and Engineering Enterprise
Solving Problems Today – Designing Solutions for Tomorrow










DoD Research and Engineering Enterprise
https://www.acq.osd.mil/chieftechnologist/

Defense Innovation Marketplace
https://defenseinnovationmarketplace.dtic.mil

Twitter
@DoDInnovation

For Additional Information

Robin Brown

Office of the Under Secretary of Defense for Research and Engineering

571-360-8630|robin.brown@dla.mil