



DMSMS-RESILIENT DESIGNS

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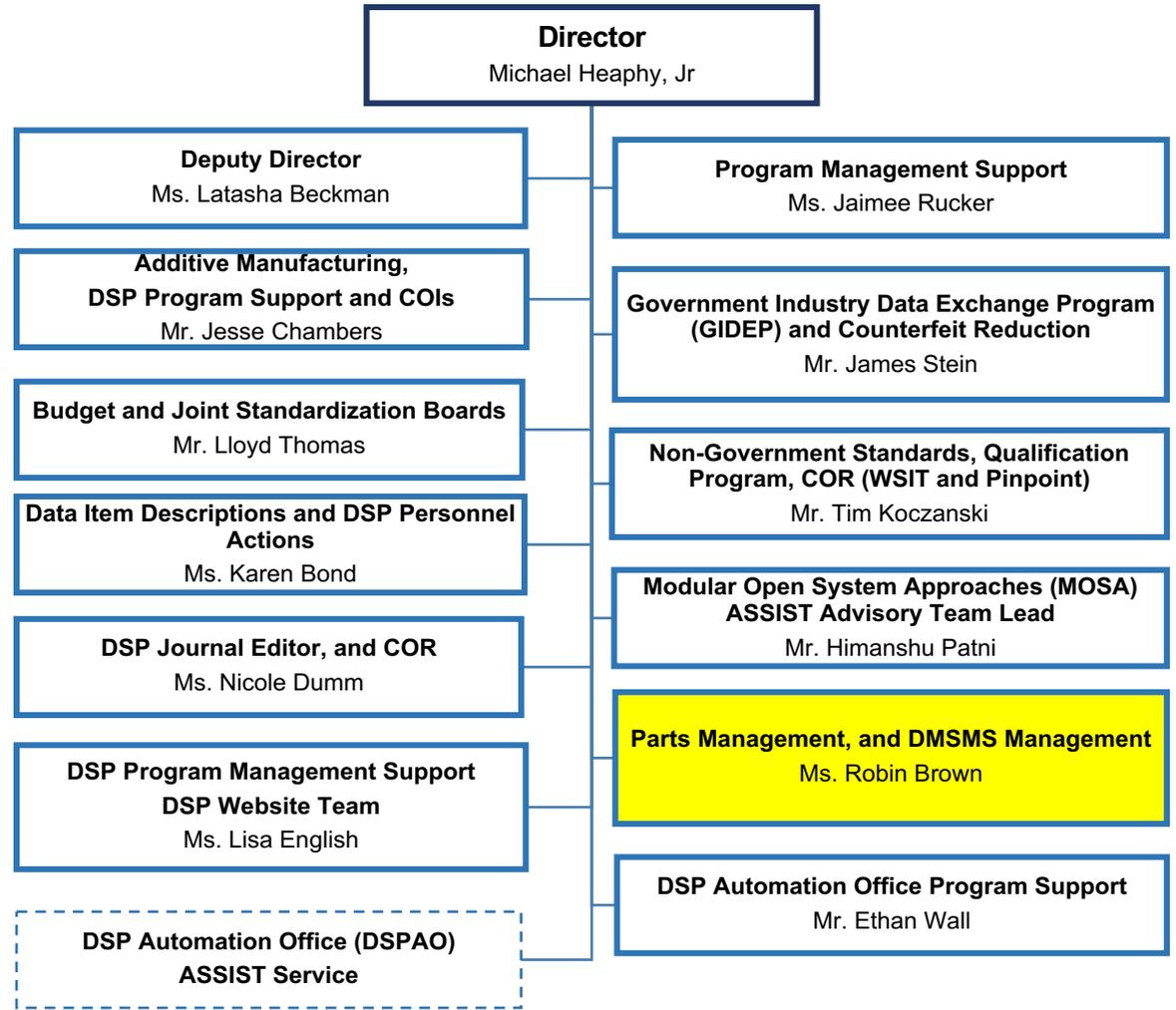
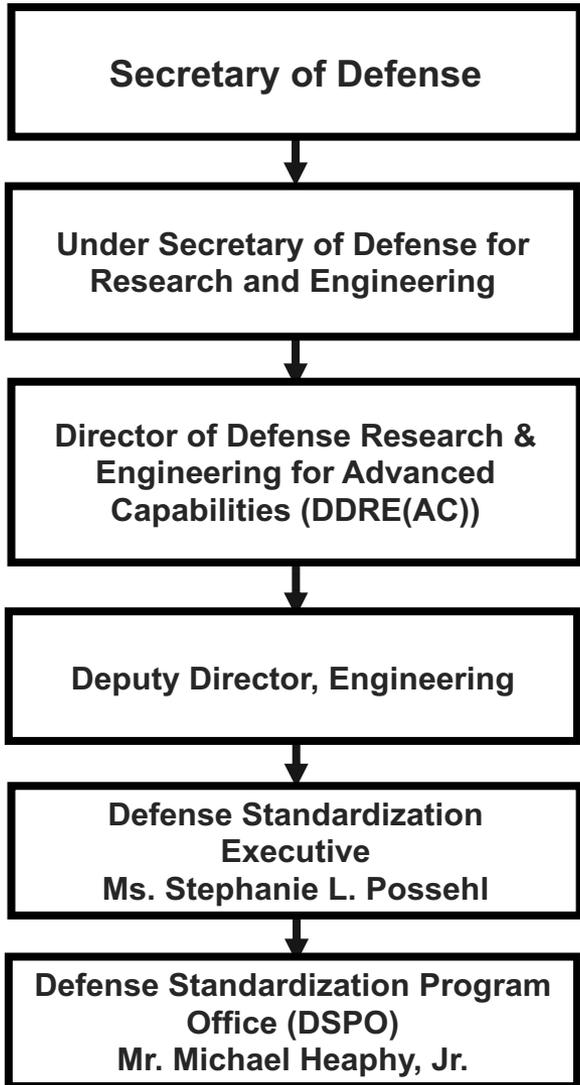
Engineering Policy & Systems

Defense Standardization Program Office

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Defense Standardization Program Office (DSPO)

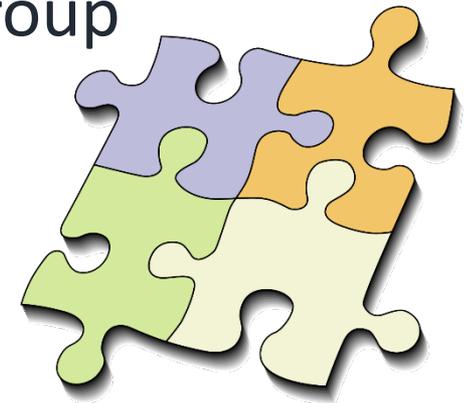




Agenda



- Parts Management and DoD Parts Management Program
- Diminishing Manufacturing Sources and Material Shortages (DMSMS) and the DoD DMSMS Management Program
- Synergy Between Parts Management and DMSMS
- Parts & Material Management Working Group
- Strategic Objectives / Resources
- Q&A





Challenges We Face Today



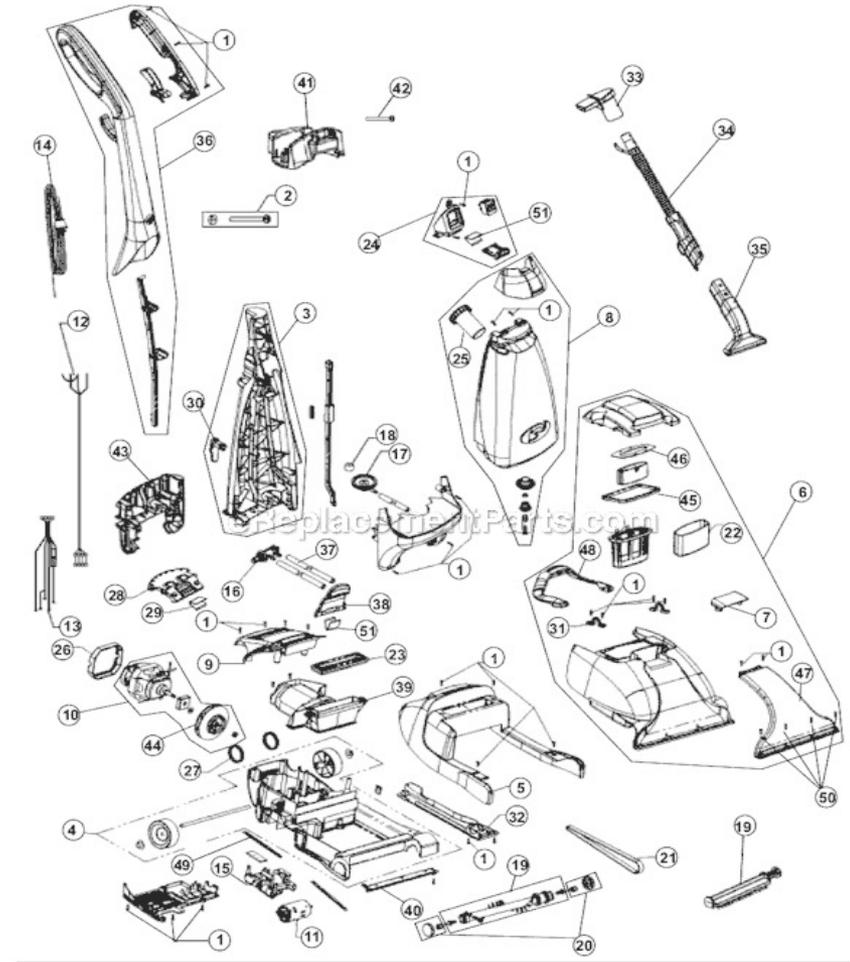
- Rapidly changing technology and accelerated acquisition timelines
- Service life extensions
- Increased use of commercial parts
- Offshore manufacturing
- Obsolescence / DMSMS
- Counterfeit parts
- Use of lead-free electronic parts and other environmental considerations



Parts Selection is Key!

Process of using most optimum parts during design. Benefits of this are:

- Reduced Costs
- Enhanced Readiness and Interoperability
- Reduced Acquisition Lead-Time
- Increased Supportability and Safety
- Enhanced Reliability and Maintainability
- Reduce Logistics Footprint

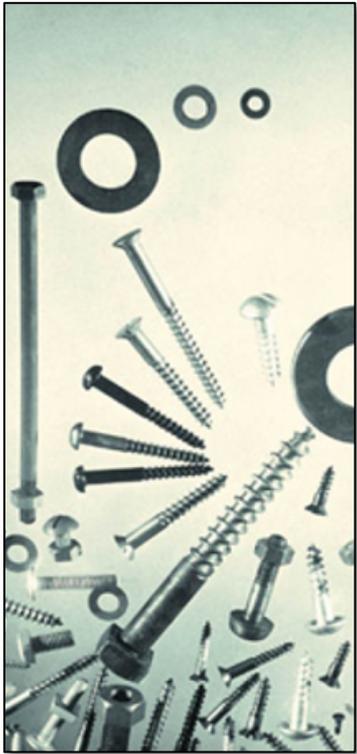




Parts Management Program



- Establishes best practices across DoD to increase availability and reduce total ownership costs. We do this by -



- Creating and revising DoD policy & guidance;
- Assessing the effectiveness of activities;
- Preparing and publishing SD-19, “Parts Management Guide”;
- Promoting education and engagement;
- Establishing and pursuing DoD-wide strategic objectives

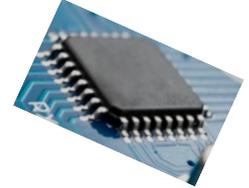


Why DMSMS / Obsolescence ?



The loss or impending loss of Manufacturers or Suppliers of items, raw material, or software

Marketing (ex. Sales Decrease vs, New Offer)



Business Strategy (ex. Restructuring, Acquisitions)



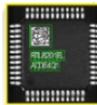
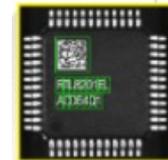
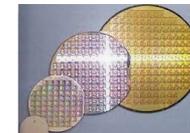
Product Catalog Rationalization



Means and Tools



Changing Technology, Manufacturing Efficiency (ex. Size reduction)



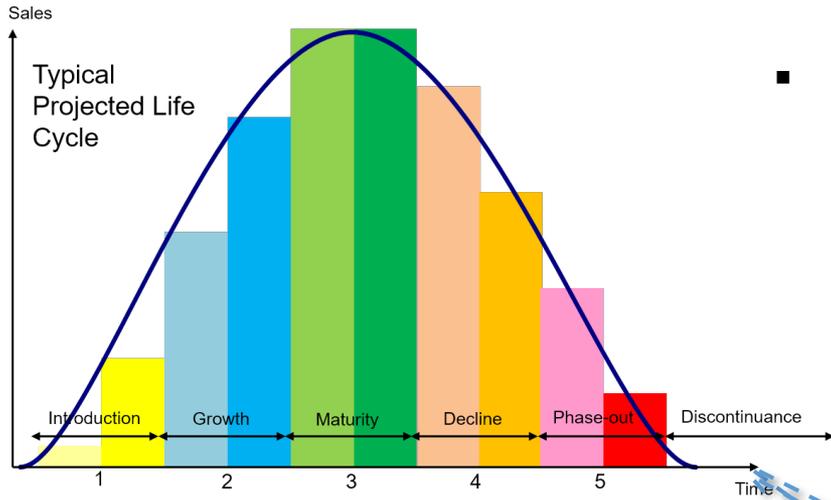
Environmental Regulations/Directives (ex. Materials)



DMSMS issues can arise with any PART within a system

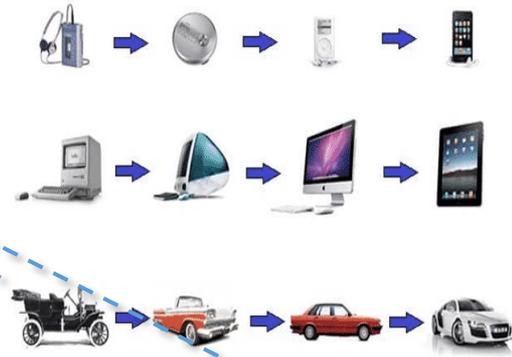


And ... DMSMS is INEVITABLE!



- DoD systems can require a decade or more to develop and then have a fielded life that spans decades
- Yet the life cycles of many items that make up a DoD system's design are brief by comparison –
 - As low as 18 months for COTS and electronic items
 - Approximately 5 years for COTS software
 - Environmental or regulatory restrictions can happen at any time

Technology Obsolescence



Life Cycle Examples

2 – 3 Years **Memories (DDRx)**

2 – 3 Years **Processors, Digital FPGA**

8 – 10 Years **Discrete (Transistors) & Analog Devices**

> 10 Years **Passive Devices (resistors, capacitors) & Connectors**

Robust Management is Necessary!



Maintaining an Aging Fleet



IOC & Motor Trend Car of the Year



1952

1975

1977

1980



1986

1997

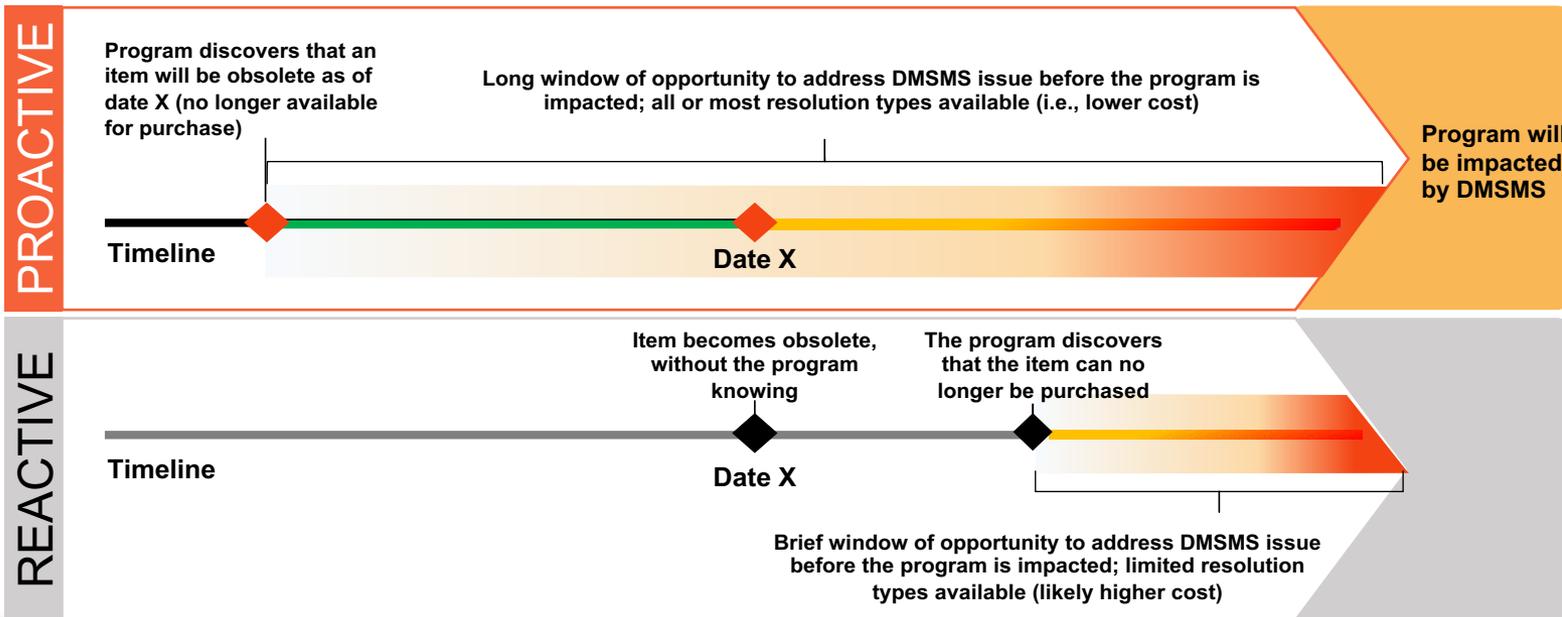
2005



Proactive DMSMS Management



- DMSMS Forecasting and Resolution -
 - Increases the likelihood of implementing a lower cost resolution / More time to consider all applicable options
 - Minimizes DMSMS-related out-of-cycle redesigns
 - Eliminate DMSMS-related schedule impacts
 - Increases operational availability
 - Reduces or controls total ownership cost



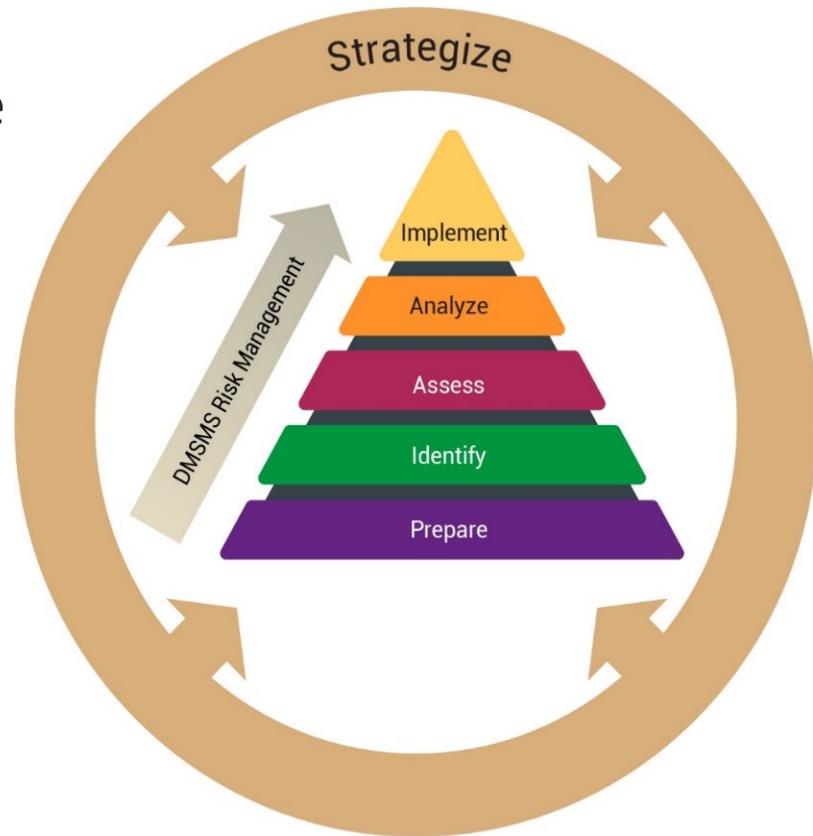
Can We Do Better Than This?



DMSMS Management Process



- **Prepare:** Establishment of a DMSMS management program infrastructure
- **Identify:** DMSMS monitoring and surveillance
- **Assess:** DMSMS impact assessment
- **Analyze:** Resolution determination
- **Implement:** Implementation of DMSMS resolutions





DMSMS Health Assessment



Item #	Item Type	Sub-System	Status Characteristics	FYx	FYx+1	FYx+2	FYx+3	FYx+4	FYx+5	FYx+6	FYx+7	FYx+8	FYx+9
123	Microprocessor	Sub-System 1	Starting Balance	4	3	2	0	-1	-2	-3	-5	-6	-7
			Predicted/ Actual Usage	1	1	2	1	1	1	2	1	1	1
			Ending Balance	3	2	0	-1	-2	-3	-5	-6	-7	-8
456	Amplifier	Sub-System 1	Starting Balance	135	122	108	92	75	55	33	8	-18	-44
			Predicted/ Actual Usage	13	14	16	17	20	22	25	26	26	26
			Ending Balance	122	108	92	75	55	33	8	-18	-44	-70
789	Touch Screen	Sub-System 2	Starting Balance	16	15	14	13	11	10	9	8	7	5
			Predicted/ Actual Usage	1	1	1	2	1	1	1	1	2	1
			Ending Balance	15	14	13	11	10	9	8	7	5	4
211	Motherboard	Sub-System 2	Starting Balance	12	10	7	4	2	-1	-4	-7	-9	-12
			Predicted/ Actual Usage	2	3	3	2	3	3	3	2	3	3
			Ending Balance	10	7	4	2	-1	-4	-7	-9	-12	-15
222	Graphics CCA	Sub-System 2	Starting Balance	11	11	11	11	11	10	10	10	10	10
			Predicted/ Actual Usage	0	0	0	0	1	0	0	0	0	0
			Ending Balance	11	11	11	11	10	10	10	10	10	10
233	Ethernet interface	Sub-System 2	Starting Balance	18	14	11	7	3	-1	-5	-9	-13	-17
			Predicted/ Actual Usage	4	3	4	4	4	4	4	4	4	4
			Ending Balance	14	11	7	3	-1	-5	-9	-13	-17	-21
244	Serial I/O CCA	Sub-System 2	Starting Balance	2	-38	-83	-128	-173	-218	-263	-308	-353	-398
			Predicted/ Actual Usage	40	45	45	45	45	45	45	45	45	45
			Ending Balance	-38	-83	-128	-173	-218	-263	-308	-353	-398	-443
255	Notebook Computer	Sub-System 2	Starting Balance	11	10	9	7	6	5	4	2	1	0
			Predicted/ Actual Usage	1	1	1	1	1	1	2	1	1	1
			Ending Balance	10	9	7	6	5	4	2	1	0	-1
Legend:													
			Sufficient Assets to Support More than 5 Years										
			Sufficient Assets to Support Next 5 Years										
			Zero Quantity Reached Within 4 Years										
			Zero Quantity Reached Within 3 Years										
			Insufficient Assets (0 or Negative)										



Resolution Options



TYPE	RESOLUTION
	No Solution Required
Logistics	Approved Item
Logistics	Life of Need Buy
Logistics	Repair, Refurbish, Reclaim
Logistics/ Engineering	Extend Production or Support
Engineering	Simple Substitute
Engineering	Complex Substitute
Engineering	Develop a New Item or Source
Engineering	Redesign—NHA
Engineering	Redesign—Complex/ System Replacement



Alternate Grade Parts

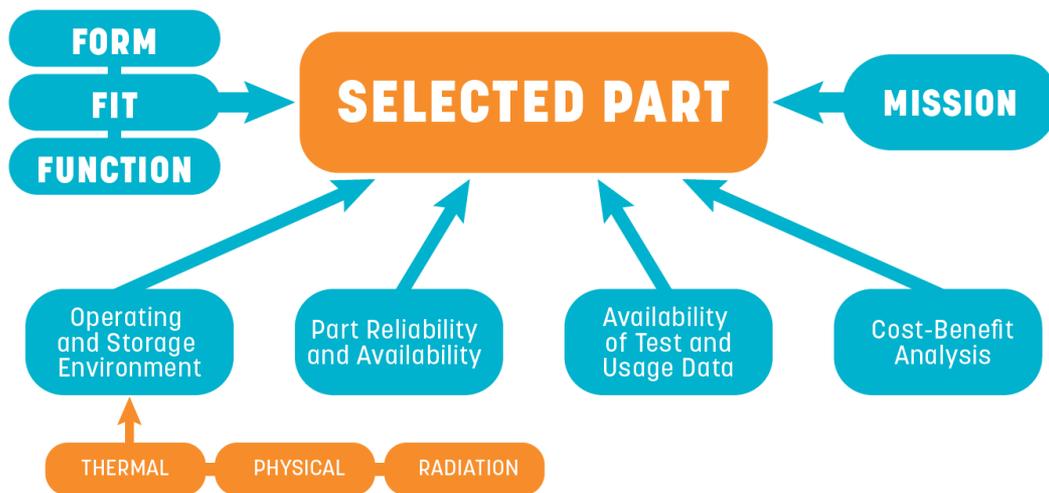


An Alternate-Grade Part is:

- Designed and manufactured for non-DoD applications,
- is not documented by military unique specifications or drawings,
- and is not manufactured specifically to meet military requirements,

leading to wide variation among commercial applications and the associated performance requirements and operating environments.

- Part Reliability and Availability
- Mission and Part Criticality
- Operating and Storage Environment
- Specific Application in the System
- Accepted Standards
- Cost-Benefit Analysis





DMSMS Management Program



- Facilitates the implementation of proactive DMSMS management to reduce the adverse effects of obsolescence issues on readiness, schedule, and cost. We do this by:
 - Creating and revising policy & guidance;
 - Championing best practices, synergies, standardization through education, training, and outreach
 - Defining and assessing effectiveness
 - Establishing and pursuing DoD-wide strategic objectives
 - Facilitating common, collaborative resolutions to cross-cutting obsolescence issues



DoDI 4245.15 DMSMS Management

- Establish and implement risk-based, proactive DMSMS management throughout the life cycle of all DoD items
- Evaluate all DoD system designs and redesigns for potential DMSMS cases that could arise during the life cycle of a DoD item
- Implement resolutions if necessary, to mitigate or minimize negative impacts from risks of DMSMS throughout the life cycle management of DoD items
- Implement improvements to DMSMS management processes throughout the life cycle of all DoD items across the DoD enterprise

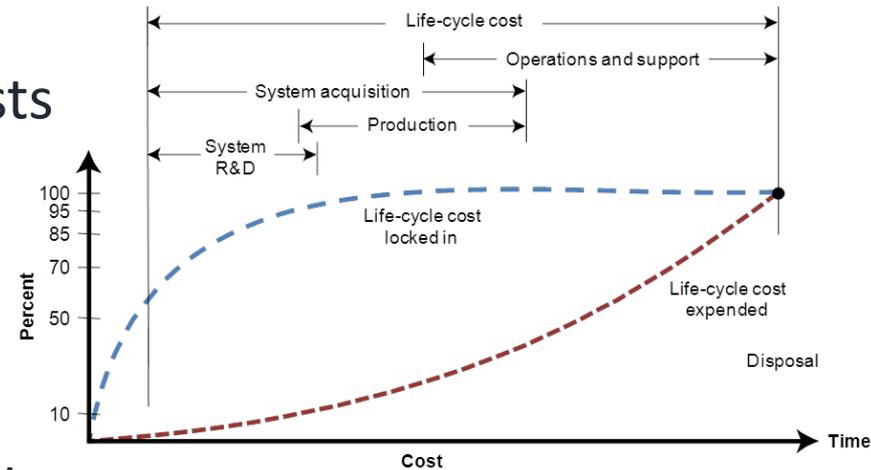
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DMSMS Resilient Designs



- Early design decisions substantially impact operations and support costs (sustainment)
- DMSMS is one product support design tradeoff consideration
- So, why not create DMSMS-resilient designs (and apply future system modification / refresh planning to avoid DMSMS issues altogether or delaying their occurrence?)
 - Selecting long life cycle items
 - Avoiding single sources of supply
 - Using open architecture is designs





COTS Pros / Cons



Myth

A design's use of COTS assemblies provides built-in obsolescence immunity

- Commercial off-the-shelf (COTS) assemblies offer an opportunity to update technology and performance on a periodic basis, as existing versions of the COTS component are replaced with the next generation

But...

- COTS assemblies short life cycles guarantees that Programs will need to assess and address the impact of COTS obsolescence on a regular basis throughout the entire life cycle
- Next generation of a COTS may or may not be backwards compatible and could require costly and time-consuming retesting and requalification of the system's new design containing the new COTS



Parts & Material Management WG





Strategic Objectives / Resources



- Assessment of Parts Management
 - SD-19 Parts Management Guide

https://quicksearch.dla.mil/qsDocDetails.aspx?ident_number=119791

- DMSMS Policy and Guidance
 - Draft DoD DMSMS Manual
 - SD-22, DoD DMSMS Guidebook

https://quicksearch.dla.mil/qsDocDetails.aspx?ident_number=275490

- DMSMS Management Plan Template

<https://www.dau.edu/cop/dmsms/>





Strategic Objectives / Resources



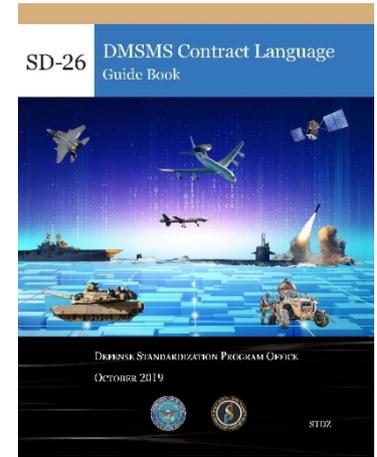
■ Contracting

- SD-26, DoD DMSMS Contracting Guide

https://quicksearch.dla.mil/qsDocDetails.aspx?ident_number=283456

- IEC 62402, DMSMS Management
- SAE-STD-0016, DMSMS Management Plans
- MIL-STD-3018, Parts Management

https://quicksearch.dla.mil/qsDocDetails.aspx?ident_number=275861



■ Standardized format for Product Change and Discontinuation Notices

■ Metrics - Parts Management and DMSMS

■ Software DMSMS Management

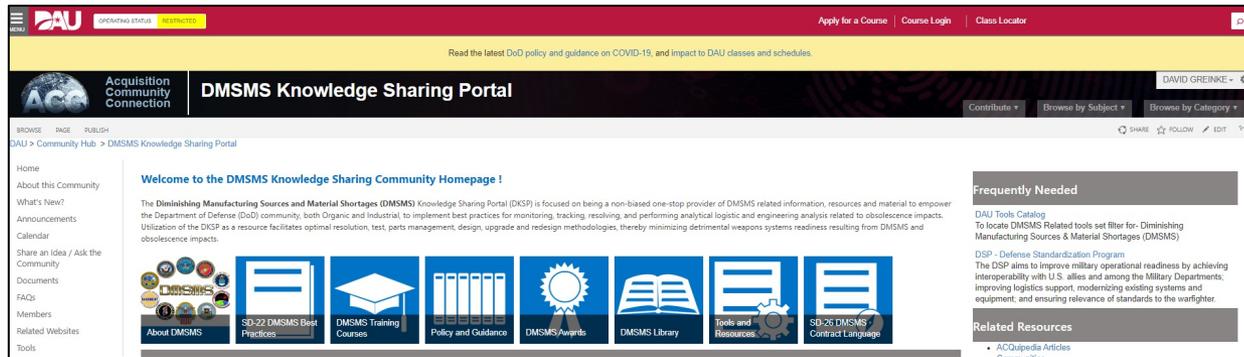
■ Training / Outreach



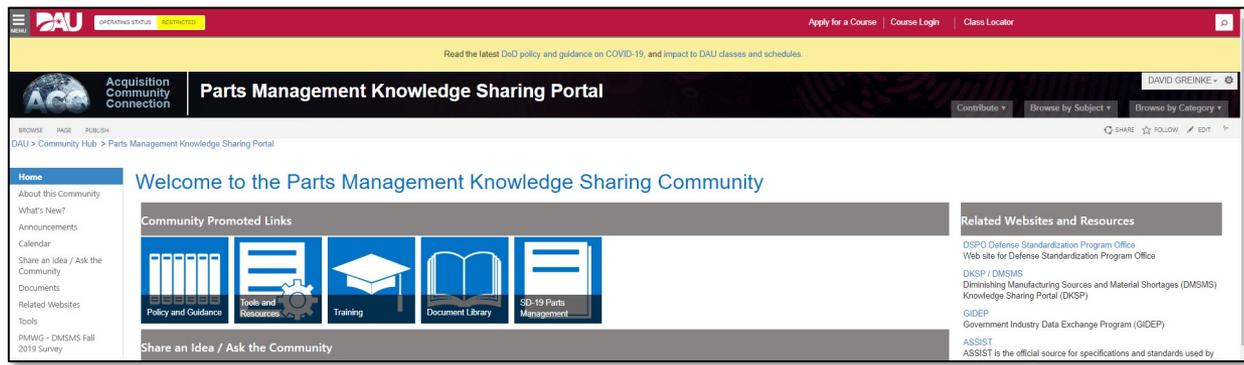
DAU Knowledge Sharing Portals



DMSMS Knowledge Sharing Portal (DKSP):
<https://www.dau.edu/cop/dmsms/>



Parts Management Knowledge Sharing Portal (PMKSP):
<https://www.dau.edu/cop/pmksp/>





Things to Remember!

- Good **PARTS SELECTION** is **KEY TO SUCCESS**
- Make sure you have the right **CONTRACT LANGUAGE**
- Build **DMSMS-RESILIENT DESIGNS**
- Create **TECH ROADMAPS / REFRESH PLANS** and follow them
- **BE PROACTIVE** - If risks are unavoidable, it is better to find out early so plans can be made to mitigate
- **DON'T SUFFER IN SILENCE** – There are people and resources that can help

Pay me now; or Pay me more later!



Questions?

