Strategic Parts and Material Lifecycle Management

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CHALLENGES WE FACE TODAY

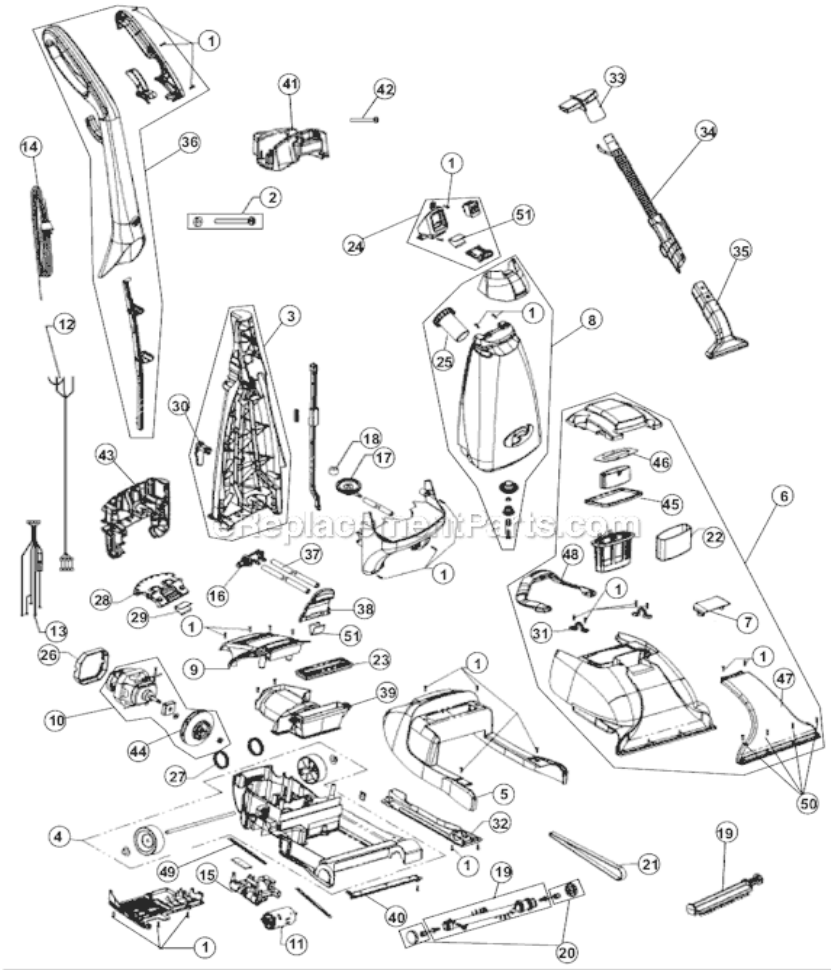
- Rapidly changing technology and accelerated acquisition timelines
- Service life extensions
- Increased use of commercial parts
- Offshore manufacturing
- Diminishing Manufacturing Sources and Material Shortages (DMSMS)
- Counterfeit parts
- Use of lead-free electronic parts and other environmental considerations

PARTS SELECTION IS KEY!

PARTS SELECTION / MANAGEMENT

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



DMSMS – OBSOLESCENCE

- The loss or impending loss of manufacturers or suppliers of items, raw materials, or software
  - Caused by competitive, regulatory market factors leading suppliers or manufacturers to:
    - ✓ Go out of business
    - ✓ Discontinue products

  - Caused by the item or software no longer performing the function for which it was intended due to other changes in the system
  - 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

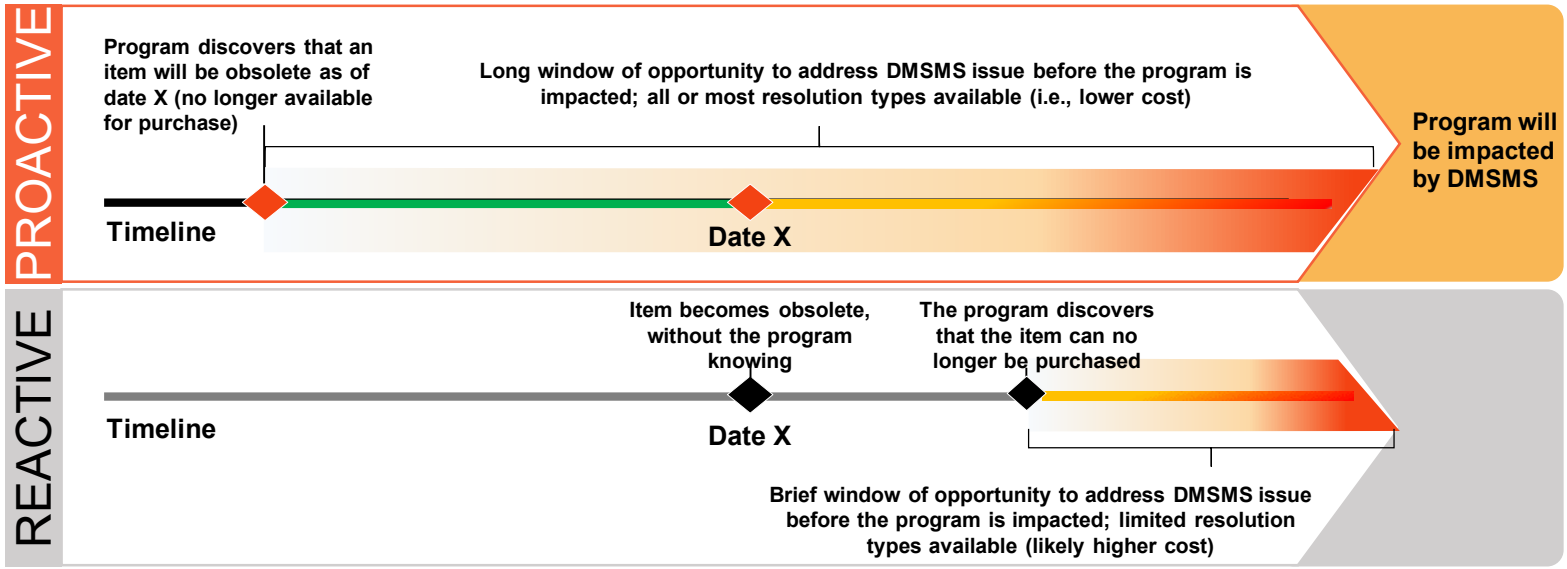
- Yet the life cycles of many items that make up a DoD system's design are brief by comparison –

  - 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

ROBUST MANAGEMENT IS NECESSARY!

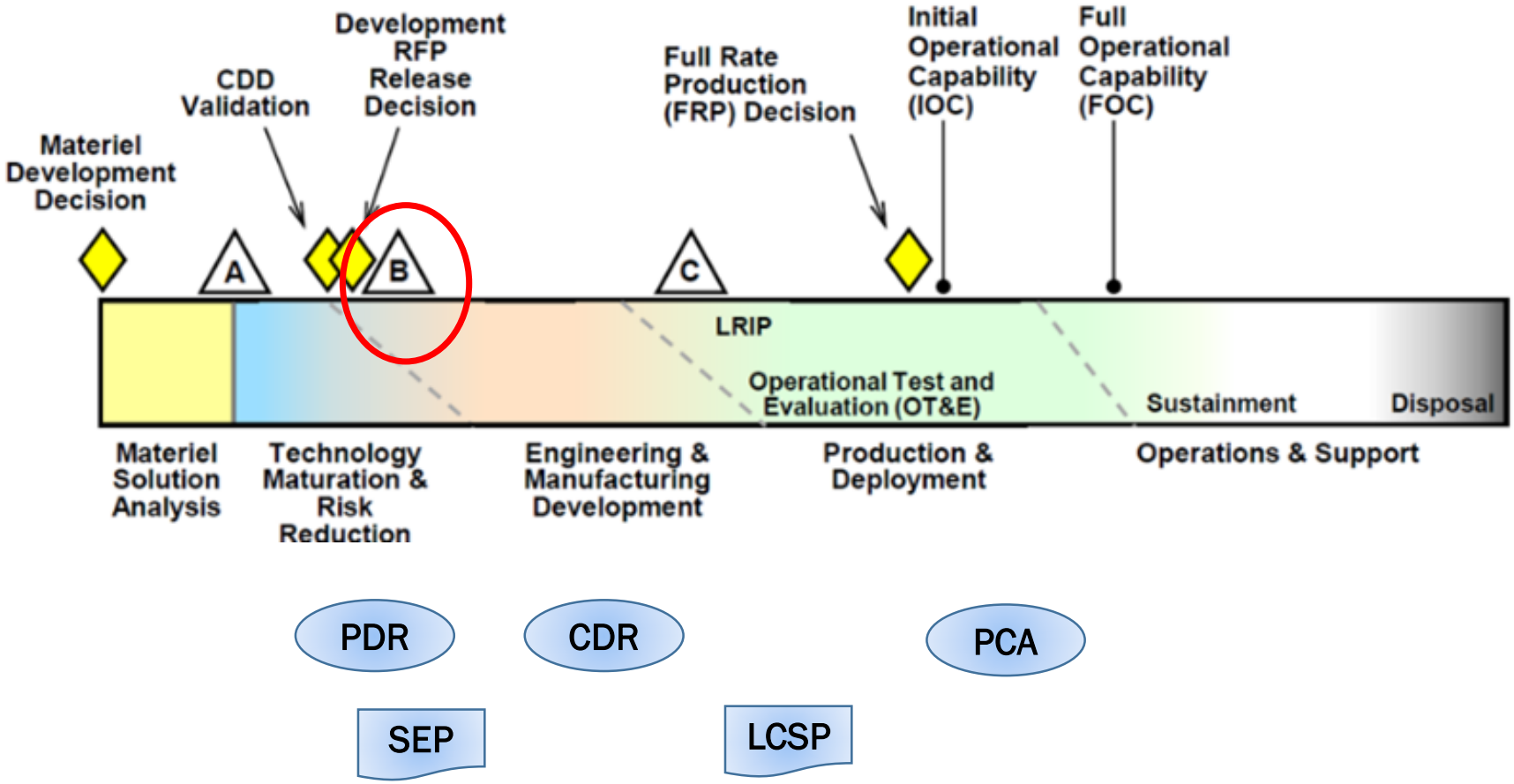
PROACTIVE DMSMS MANAGEMENT

- 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!?

CURRENT MINDSET – MILESTONE B

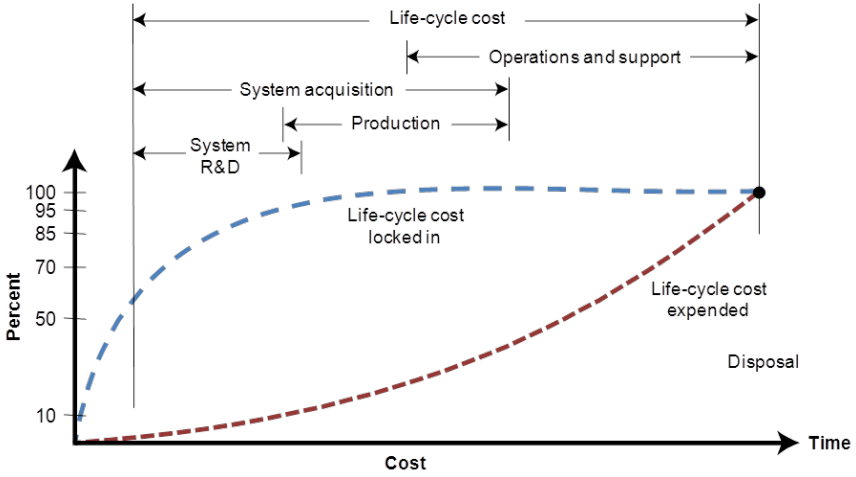


FOCUS AT PDR - CDR - PCA

DMSMS RESILIENT DESIGNS

- Early design decisions substantially impact operations and support costs (sustainment)

- DMSMS is one product support design tradeoff consideration

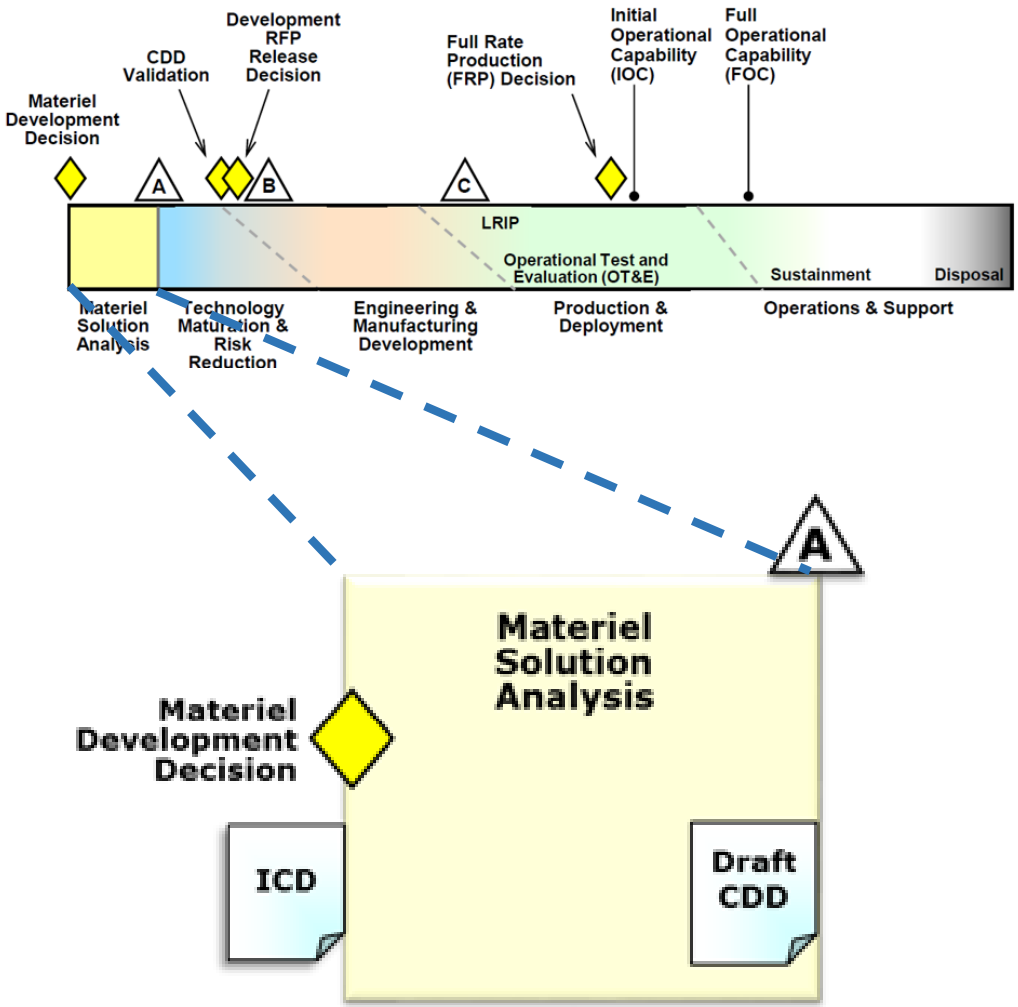


Source: W.J. Larson and L.K. Pranke, *Human Spaceflight: Mission Analysis and Design* (McGraw-Hill, 1999).

- So, why not create a DMSMS-resilient design (and apply future system modification / refresh planning) to avoid DMSMS issues altogether in addition to delaying the occurrence of DMSMS issues that can not be prevented?

THIS NEEDS TO HAPPEN PRE MS-A

WHERE TO BEGIN?



Pre-Milestone A –

Materiel Solution Analysis

- Analysis of Alternatives (AoA)
- Independent Technical Risk Assessment (ITRA)
- Alternative Systems Review (ASR)
- Systems Engineering Plan (SEP)
- Life Cycle Sustainment Plan (LCSP)

MAINTAINING AN AGING FLEET

IOC & Motor Trend Car of the Year

1952

1975

1977

1980

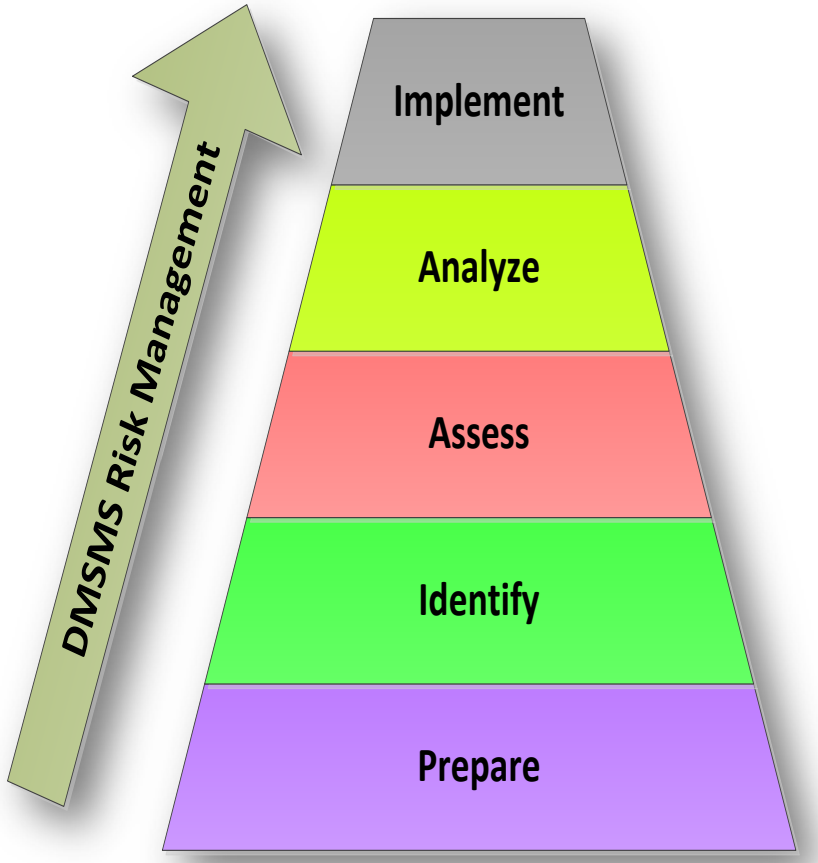
1986

1997

2005

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-System1	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

DMSMS MANAGEMENT GUIDANCE

- **SD-22 DMSMS Guidebook:**
  - DMSMS Management Program Best Practices

Link to SD-22, A Diminishing Manufacturing Sources and Material Shortages (DMSMS)
https://quicksearch.dla.mil/qsDocDetails.aspx?ident_number=275490

- **SD-26 DMSMS Contract Language Guide**:
  - Organized around 28 different subject areas that encompass important aspects of DMSMS management throughout the lifecycle
  - Illustrative contract language provided for each and which to use under different circumstances
  - Also includes compendium of helpful CDRLs and DIDs

Link to SD-26, DMSMS Contract Language Guidebook
https://quicksearch.dla.mil/qsDocDetails.aspx?ident_number=283456

IEC 62402 and SAE-STD-0016

PARTS MANAGEMENT GUIDANCE

- **SD-19 Parts Management Guide:**
  - Parts Management Best Practices

Link to SD-19 Parts Management Guide
https://quicksearch.dla.mil/qsDocDetails.aspx?ident_number=119791

- **MIL-STD-3018**:
  - Parts Management requirements in contracts for new designs and modifications
  - Creates consistency across DoD Parts Management requirements
  - Requires a Parts Management Plan
  - Parts Management processes for prime contractors and subcontractors
  - Parts selection order of preference

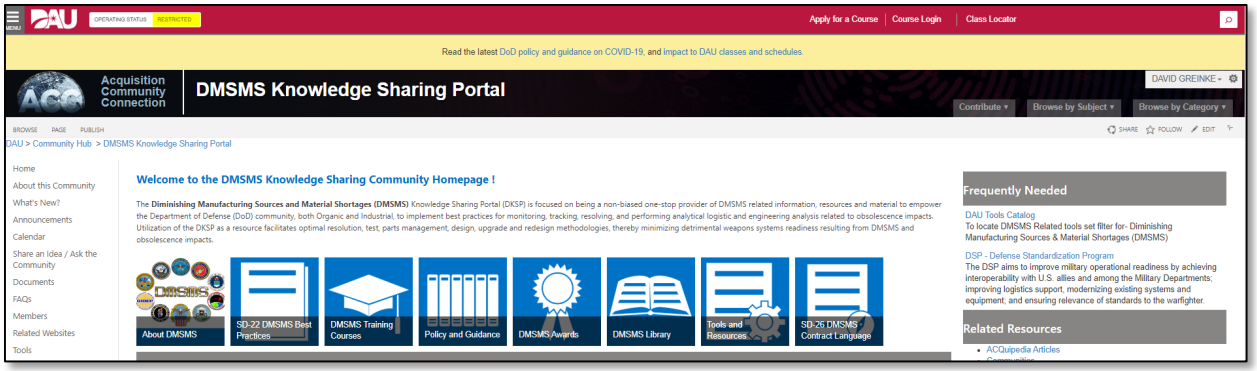
Link to MIL-STD 3018 Parts Management
https://quicksearch.dla.mil/qsDocDetails.aspx?ident_number=275861

DAU PARTS & MATERIAL LIFECYCLE MANAGEMENT COURSES

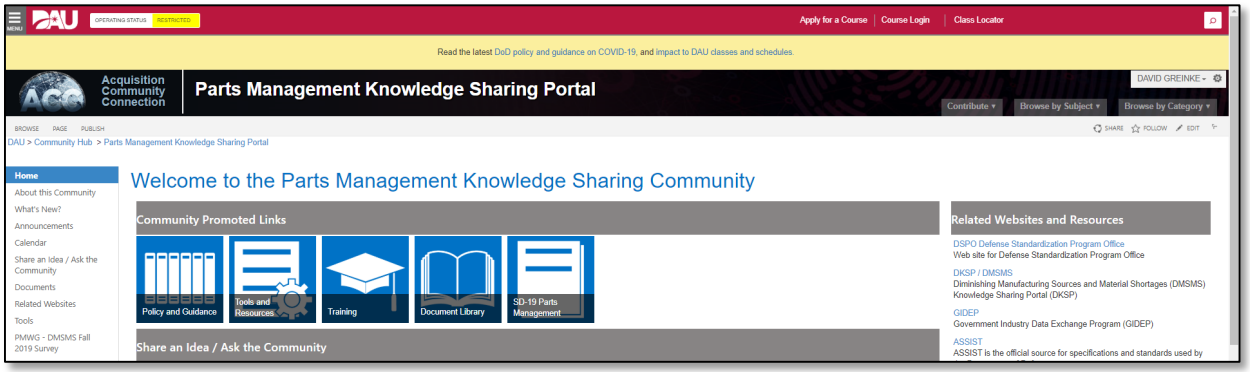
- CLL 032 Preventing Counterfeit Parts in DoD Supply Chains
- CLL 038 Provisioning & Cataloging
- LOG 0390 Additive Manufacturing (Future)
- CLL 047 Sustaining Engineering
- CLL 051 System Retirement, Disposition, Reclamation, Demil, Disposal
- CLL 200 DMSMS: What Program Manager Needs to Know
- CLL 201 DMSMS Fundamentals
- CLL 202 DMSMS Executive Overview
- CLL 206 Introduction to Parts Management
- CLL 207 DMSMS Component Research
- CLC 004 Market Research
- CLE 019 Modular Open Systems

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/



OUTREACH


DMSMS
2019
DECEMBER 2-5, 2019
PHOENIX, ARIZONA


Escape


Welcome
to the Fall 2018
Parts Management
Working Group


Parts Management
Working Group

Q&A