Topics

Supportability Management Best Practices in accordance with SD-22 DMSMS Management Guidelines

Parts Standardization & Management Committee

3 November 15

Topics

- Building a Robust DMSMS Program and Process
  - SD-22 Capability Levels
  - Product and Content Landscape
- Supportability Management DMSMS Process
  - Key Elements and Process Steps
  - SD-22 Requirements for Robust Capabilities
- Keys to a Successful DMSMS Program
  - Achieving Program Compliance with SD-22 Guidelines, Requirements, Objectives and Tooling
  - SMART Full Scale Integrated Solution (Level 4)

Building a Robust DMSMS Program

SD-22: A Guidebook of Best Practices for Implementing a Robust DMSMS Management Program

A Robust DMSMS Program is important to the Program Office because it accomplishes the following:

- Establishes criteria for evaluating design alternatives from a DMSMS management perspective
- Ensures that all parts and material to design, produce, or repair the system or equipment are available
- Reduces or controls total ownership cost
- Provides for risk mitigation as it applies to DMSMS issues
- Identifies potential DMSMS issues early enough to allow a variety of solution approaches
- Evaluates more than one approach to resolve DMSMS issues
- Collects metrics to monitor program effectiveness

Building a Robust DMSMS Program

SD-22: Program Capability Levels

Level 1: Has minimal DMSMS management capability:

- DMSMS Management Plan is required
- Practices are largely reactive with no record keeping and no metrics

Level 2: Practices are somewhat proactive:

- DMP developed and DMSMS point of contact trained
- BOM data collected but maybe not indentured
- Predictive tools and data management tools in place
- Results of predictive analyses examined continually
- No resolution budgets - funding sought on case-by-case basis

Building a Robust DMSMS Program

SD-22: Program Capability Levels

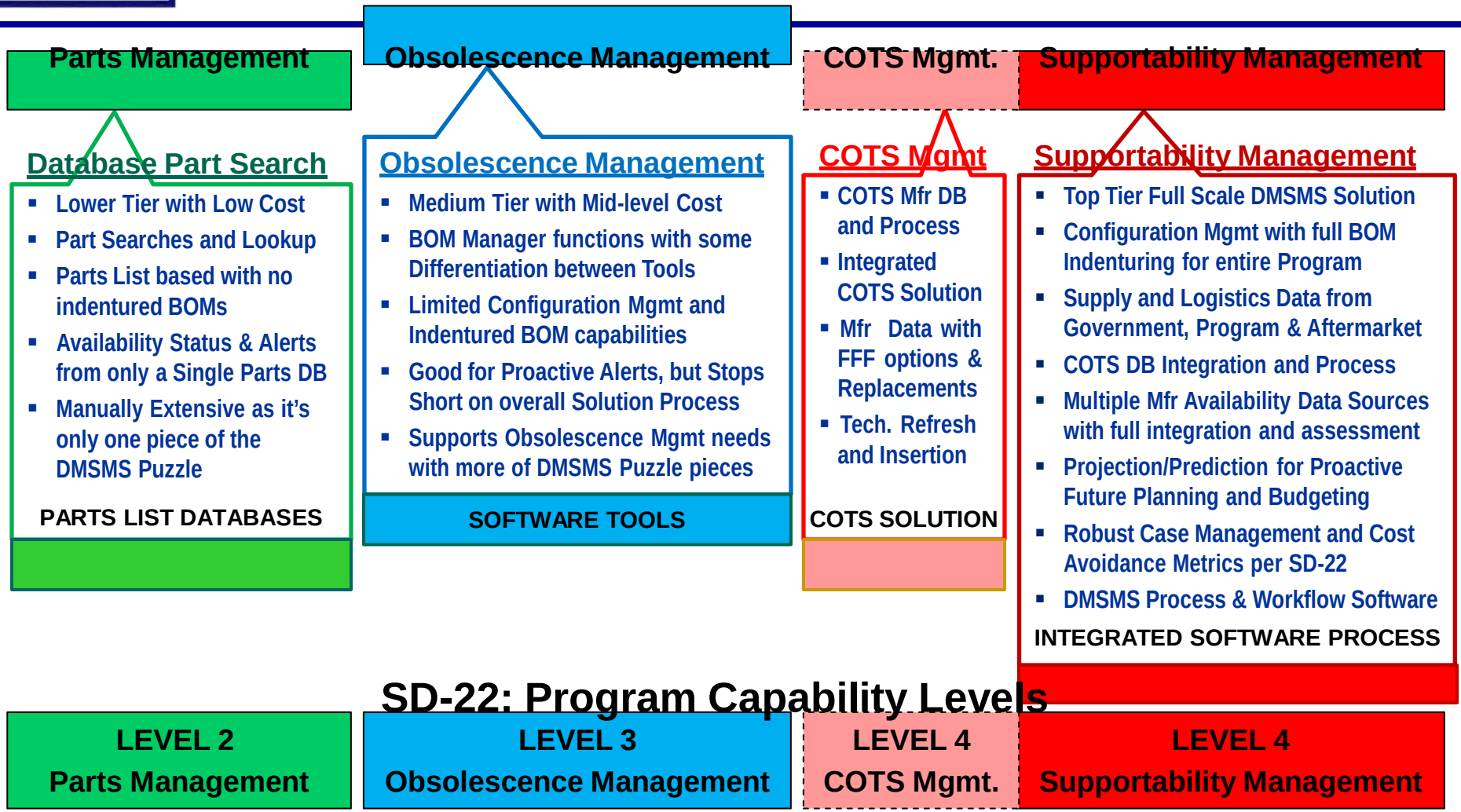
Level 3: Proactive practices are used when needed:

- DMP developed and DMT trained
- Indentured BOM data collected
- Comprehensive DMSMS management systems in place
- Results of at least two predictive tools examined continually and vendors surveyed periodically for COTS assemblies & piece parts
- Technology roadmaps being used to determine impact
- Resolution budgets funded based on projections of issues - out year budgets unfunded

Level 4: Robust DMSMS management capability (all of Level 3 plus):

- DMT members have advanced DMSMS training
- Extensive logistics and programmatic data and vendor surveys being used to determine when an operational impact will occur
- Active engagement in obtaining other sources of funding – out year budgets programmed

DMSMS Product & Content Landscape



SD-22: Program Capability Levels

LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 4
Parts Management	Obsolescence Management	COTS Mgmt.	Supportability Management

Supportability Mgmt DMSMS Process

Program Management

Step 1: Coordination with Program Sponsors, Government, OEMs, and Industry Partners

Configuration Mgmt

Step 2: Load & Cleanse Configuration Bill of Materials (BOM)

Alert Management

Step 3: Proactively Monitor Supply and Obsolescence Alerts

Step 4: Assess Criticality, Usage and Commonality

Case Management

Step 5: Open, Collaborate, Solve and Close Cases

Solution Management

Step 6: Capture Cost Avoidance Metrics with Return on Investment (ROI)

Cost Management

Step 7: Detailed Reporting and Review

Overall DMSMS Process Management

Step 8: On-Going Supportability Management with Decision Support & Supply Chain Collaboration

DMSMS Process Action Steps

Step 1: Program Coordination and Collaboration

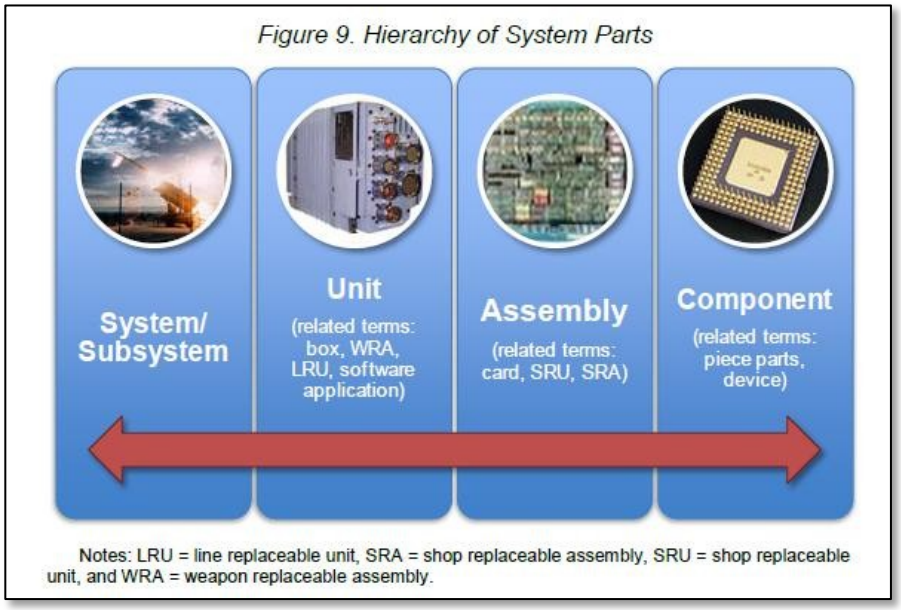
- Program Office and Sponsor Support is crucial to Success
- Need sound DMSMS Management Plan and Guidance
- Sharing and Transfer of Program related Data
- Teaming with both Logistics and Engineering is required
- Program Manager coordination with key OEM Stakeholders

Step 2: Load and Cleanse Configuration Baselines

- Determine Source(s) and Comprehensiveness of Data
- Complete Indentured Bills of Materials (BOMs) are essential
- BOMs require exact Manufacturer Part Numbers and NSNs, to identify Availability and Supply / Asset status
- Evaluation of Solutions at the Part or Board Level is required
- Configuration Management and Control is a key element

Configuration and Systems Mgmt

SD-22 Hierarchy and Indenturing Breakdown



- There are five (5) levels of indenturing / decision making in SMART:
  - System Level, Equipment Level, SAU Level , LRU Level & Part Level
- System is the top level for which all other levels will rollup and report upon. Thus the designation of the System is an important part of how configuration control and management is implemented, as well as the overall DMSMS reporting outputs and Supportability process.

DMSMS Process Action Steps

Step 3: Monitor Obsolescence and Supply Alerts

- Proactive Alert Notifications analyzed from Industry Data Sources
- Supply Workflow Analysis – Government / Program / Aftermarket
- Alerts direct from Mfrs with Years to Obsolete Projections
- Part Replacement options with Form / Fit / Function Ratings
- Product Change Notices (PCN), RoHS, Lead Free & GEM Alerting

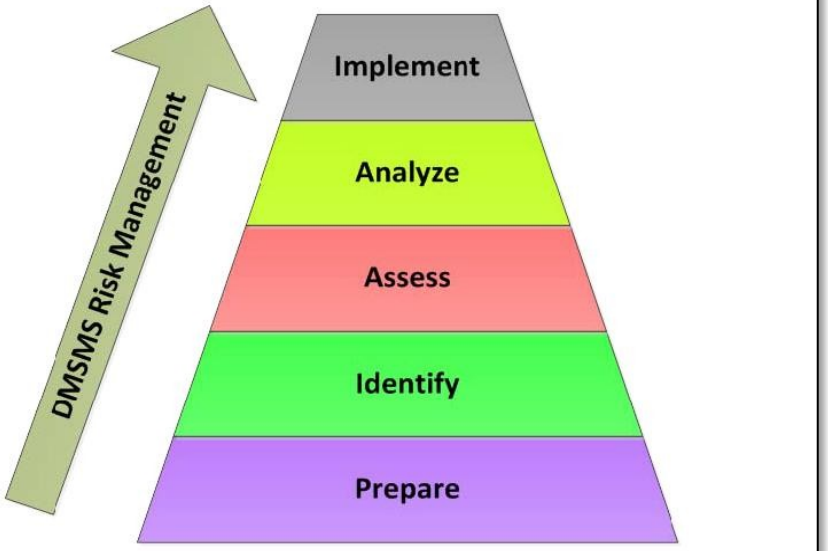
Step 4: Assess Criticality, Usage & Commonality

- SCORE provides Ranking & Prioritization with Health Assessment
- Indenture Tree Breakdown with System Usage and Profiling
- Assess Commonality and System Impacts across Programs
- Amortize Costs & Resources with Related Cases / Solutions
- Determine Impacts & best Solution Options across Systems

SD-22 DMSMS Mgmt Process Steps

- **Prepare:** Develop a DMSMS strategy and a DMSMS Management Plan (DMP). Form a DMSMS management team (DMT) representing all stakeholders. Establish, document, and resource DMSMS management processes that the DMT should follow.
- **Identify:** Secure access to logistics, programmatic, and item Data for Monitoring and Surveillance tools. Identify items with immediate or near-term obsolescence issues.
- **Assess:** Considering the population of problem items, identify and prioritize the items and assemblies most at Risk for current and future Readiness or Availability Impacts.
- **Analyze:** Examine the problem items with and develop a set of potential DMSMS Resolutions for the items and their higher level assemblies. Determine the most cost-effective resolution.
- **Implement:** Budget, fund, contract or arrange for, schedule, and execute the selected Resolutions for the high-priority items.

Figure 1. Steps in the DMSMS Management Process



Evaluating Solutions – Supply Support

- SD-22: Logistics data should be considered a factor in DMSMS impact assessment. Below are some examples of the types of logistics data a DMSMS management program should seek to collect:
  - Average Demand – *Quarterly Demand (Government and Program)*
  - On Hand – *Assets on Hand (Serviceable Assets)*
  - Due In/Due Out – *Assets Due-In*
  - Procurement Lead-Time – *Lead Times (Quarters)*
  - Repair Philosophy – *SM&R, AAC, RNCC, RNVC*
  - Cost – *Unit Price, Repair & Replacement Price (multiple sources)*
  - Back-Orders and how long – *Reorder Point and Depletion Date*
  - Unserviceable – *Repairable Assets with Condition Coding*
  - Measure of Reliability – *Demand or Failure Rate or Criticality*
- In the list above the SD-22 logistics data is correlated to the SMART Supply Support Logistics data elements for reference.

DMSMS Process Action Steps

Step 5: Open, Work, Solve and Close DMSMS Cases

- Need a Case Management platform with Systematic Process
- Open and Work Cases with Delegation & Collaboration
- Assign, Monitor and Work Cases with Prioritization
- Data-Logic based Recommended Solutions based on Feasibility and Cost Variables
- Decisions are Time-Sensitive as low cost options not acted on can turn into Costly Re-designs in the future
- Solve and Report on Cases with detailed tracking
- Closed Cases capture detailed Cost Avoidance Metrics
- SMART Closed Loop Decision Support Process handles all aspects of the Case Management requirements

SD-22 Case Management and Cost Metrics

The DMT should continually evaluate the effectiveness of the DMSMS management program measured against the defined DMT objectives. Recording and periodically analyzing performance metrics are important elements of this evaluation. Many different metrics can and should be captured for a DMSMS program. The DMT should determine what metrics to use as a basis for evaluation, how to collect those metrics (contractual requirements may be necessary), and how frequently to report those metrics. In addition, a feedback loop is needed so that the DMT can continually improve the DMSMS processes, process inputs, and process outputs. Below are some examples of DMSMS program evaluation metrics:

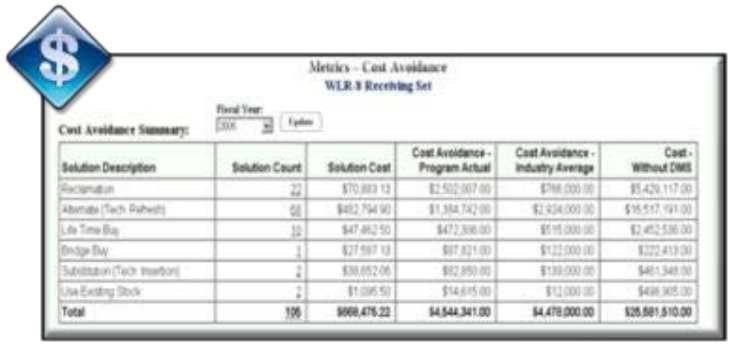
- Number of DMSMS notifications or cases created
- Number of cases closed / resolved
- Average time to case closure / resolution
- Estimated or actual cost avoidance (depending on data available)
- Return on Investment (ROI)
- Operational availability deficiencies due to obsolescence avoided

To the greatest extent possible, metrics should be focused on leadership concerns. In that way, leaders can be more readily convinced of the benefits of DMSMS management and, consequently, will be more likely to support the DMSMS management program.

DMSMS Process Action Steps

Step 6: Cost Avoidance Metrics

- Detailed Cost Avoidance Metrics
- Solution Costs are based on “Actual” Costs
- Program Justification with Built-in ROI



Solution Description	Solution Count	Solution Cost	Cost Avoidance - Program Actual	Cost Avoidance - Industry Average	Cost - Without DMS
Reclamation	22	$70,883.13	$2,502,007.00	$766,000.00	$5,429,117.00
Alternate (Tech. Refresh)	58	$482,794.90	$1,384,742.00	$2,924,000.00	$16,517,191.00
Life Time Buy	10	$47,462.50	$472,306.00	$515,000.00	$2,452,536.00
Bridge Buy	1	$27,597.13	$87,821.00	$122,000.00	$222,413.00
Substitution (Tech. Insertion)	2	$38,652.06	$92,850.00	$139,000.00	$461,348.00
Use Existing Stock	2	$1,095.50	$14,615.00	$12,000.00	$498,385.00
Total	106	$668,475.22	$4,544,341.00	$4,478,000.00	$25,581,510.00

Step 7: Reporting

- On Demand Custom Reporting and Summaries
- Defined Current Systems Sustainment status

Step 8: On-Going Supportability Management

- Continuously Track on-going Alerts and Work Cases
- Provide End of Support Analysis & Reporting
- Monitor Supportability (Source & Stock) Data
- Monthly Status and Quarterly Supportability Reports, defining current Systems Sustainment status for DoD
- SMART SCORE Process tracks Supportability Health

SCORE Before

SCORE After

Tracking and Cost Accounting for DMSMS Programs

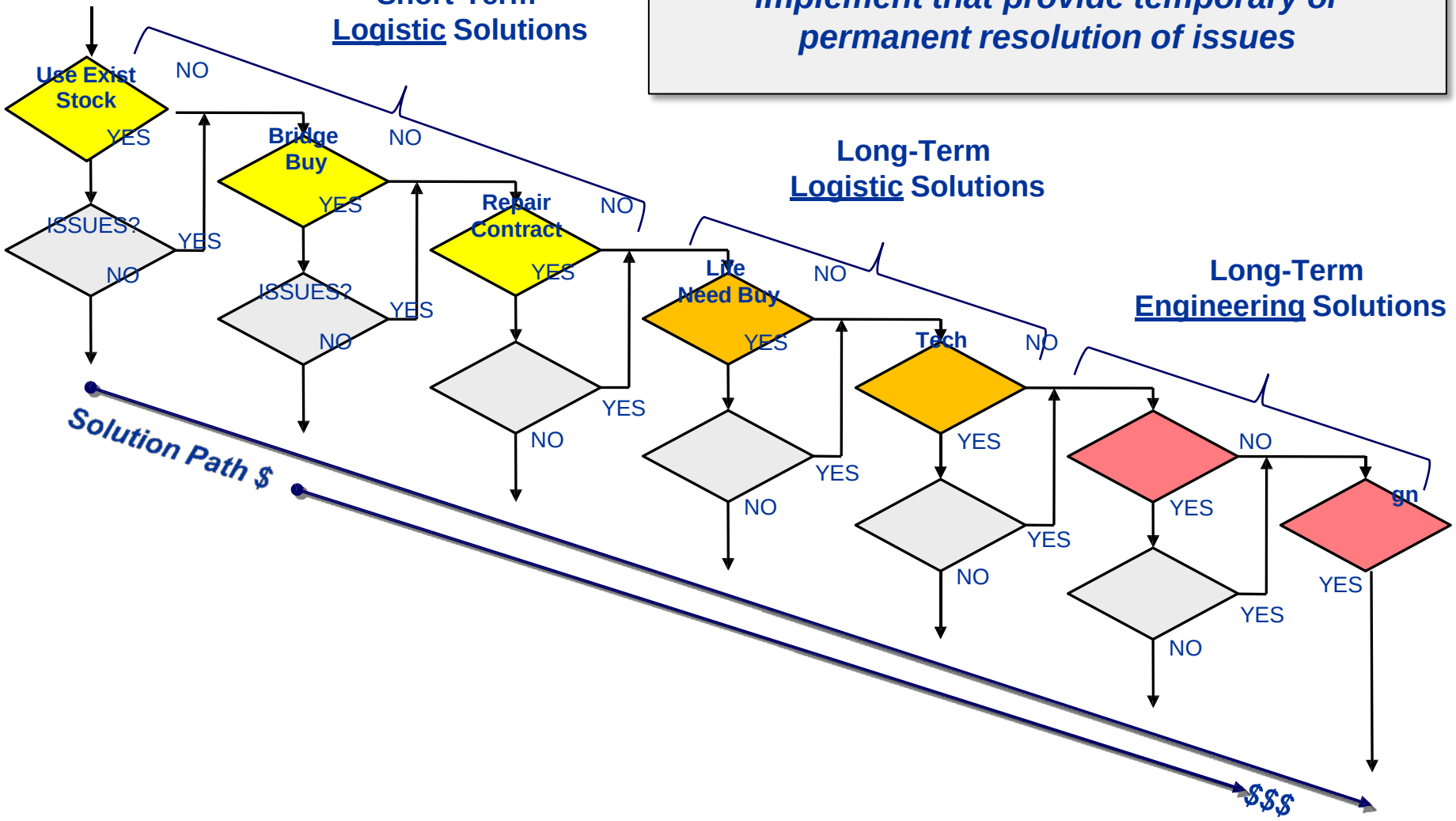
SD-22 Cost Avoidance Defined

Measuring DMSMS Solution Cost Avoidance. Recall that the supporting advocacy of a proactive DMSMS Management Program is that “finding solutions early will save money.” Cost avoidance methodology ranks each resolution from lowest cost to highest cost. Cost avoidance is determined by subtracting the average cost of a resolution from that of the next-higher average cost resolution. The program DMT should keep track of actual solution costs and can use them to develop a set of program-specific resolution metrics associated with individual Problem Part Reports (PPRs) or solutions. Table metrics should be used only as a default.

The resolution cost metrics can be used to compute cost avoidance, defined as the average cost of the selected solution minus the average cost of the **next most technically feasible solution.** For example, when a normal substitute solution is selected, it may not have been possible to use an aftermarket or emulation solution. The redesign–custom part solution might be the next technically viable option. An NHA redesign may resolve multiple component DMSMS problems

DMSMS Solution Waterfall Chart

There are multiple solution options to implement that provide temporary or permanent resolution of issues



Reporting Case Status and Metrics

Reporting Areas to Program Offices

- Current DMSMS Caseload
- Current Health Analysis
- Obsolescence Overview
- Case Load
- Case Status (Open / Pending / Resolved or Closed)
- Recent DMSMS Alerts since last Report
- Alerts Processed
- Unresolved Alerts
- Solution Metrics
- Cost Avoidance / Return on Investment
- End of Support / Supportability End Date
- Plans for Next Reporting Period

Keys to a Successful DMSMS Program

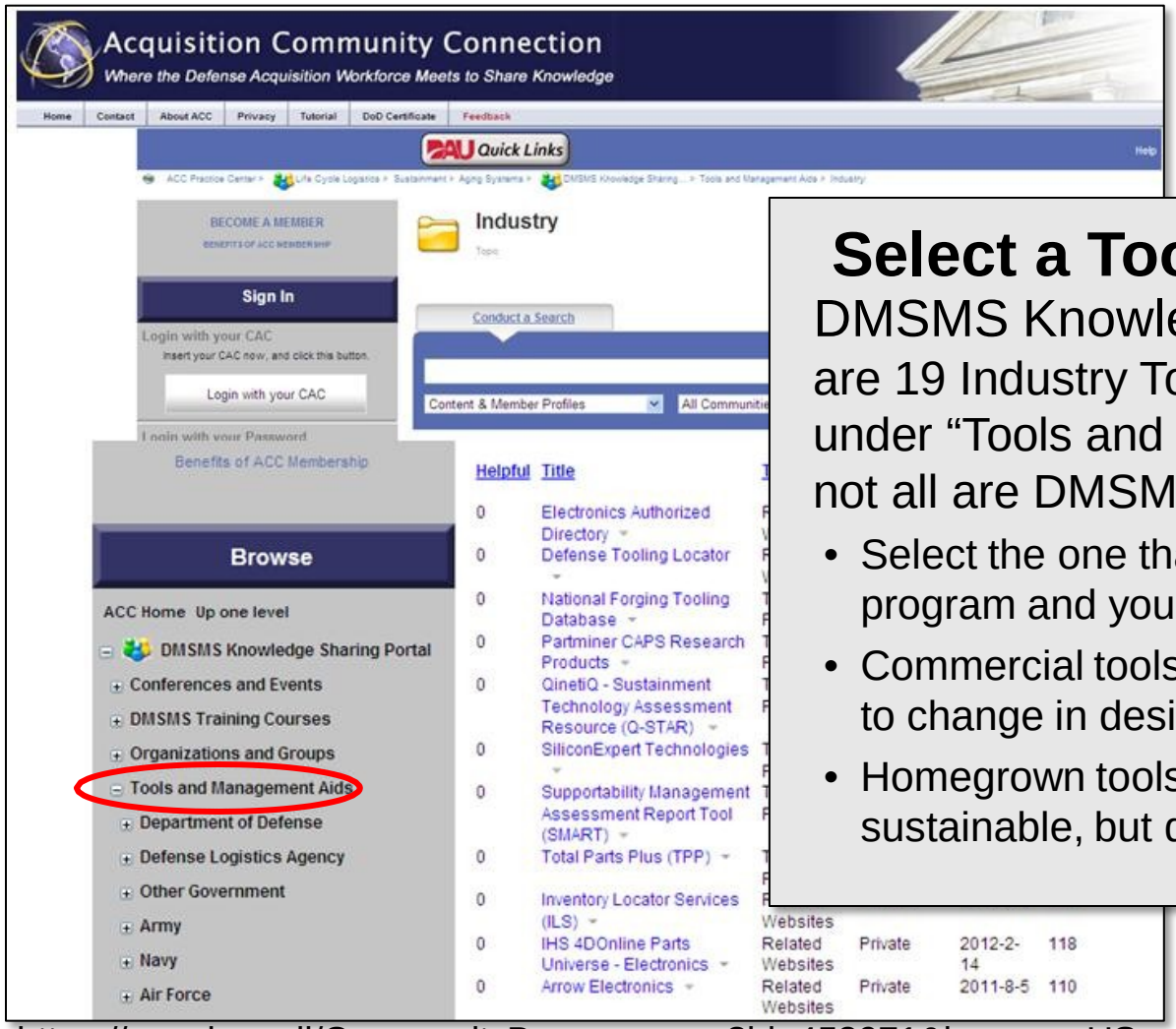
Keys to a Successful DMSMS Management Program

- Program Office “Buy-In” or commitment
- DMSMS Management Team (DMT)
- Accurate and Comprehensive Bills of Materials (BOMs)
- Multiple Predictive Tools and Databases
- Financial Resources with Established Budget

DMSMS Management Team (DMT)

- The Program Office should charter the DMT and clearly identify and authorize its activities
- The DMT should represent both internal and external organizations that provide routine and recurring support to the DMSMS management program
- In some cases, it may be appropriate for representatives of other system DMTs to participate if their DMPs and processes interact

DMSMS Tools Guidelines



https://acc.dau.mil/CommunityBrowser.aspx?id=453971&lang=en-US

Select a Tool for your Program

DMSMS Knowledge Sharing Portal - there are 19 Industry Tools and 10 Navy Tools listed under “Tools and Management Aids”. (Note not all are DMSMS Tools)

- Select the one that meets the needs of your program and your program office.
- Commercial tools vary in capabilities are subject to change in design, price and ownership.
- Homegrown tools are seldom cost effective or sustainable, but do provide for customization.

Guidelines for Monitoring/Surveillance Tools

In addition to being cost-effective, reliable, and user friendly, a predictive obsolescence tool should be able to do the following:

- Manage accurate configurations
- Enable real-time assessments of availability for qualified components
- Identify obsolescence issues and specific quantities per affected assembly
- Identify all potential resolution options
- Identify aftermarket sources of supply
- Generate timely alerts on production change notifications and PDNs
- Enable real-time views of current part availability analysis
- Rapidly develop obsolescence case sheets, providing streamlined and complete status of obsolete component issues
- Provide engineers with data needed to evaluate & implement resolutions
- Share notes and resolutions across all managed platforms and systems
- Enhance productivity by minimizing the impact on engineering staffs, while rapidly providing critical data needed for decision making

SMART Integrated Solution – Level 4

Industry Embedded Data Sources

Counterfeit Data

Obsolescence Databases

IHS 4DOnline CAPS Universe

erai

Q-Star

SMART Supportability Management Assessment Report Tool

AfterMarket Suppliers

COTS Supplier Database

- Mfr Availability Databases – Multiple Sources over 500 million Parts
- COTS Supplier DB – 10,000 items Supply/Logistics Data – Program, Government and Aftermarket
- Counterfeit Detection (ERAI)

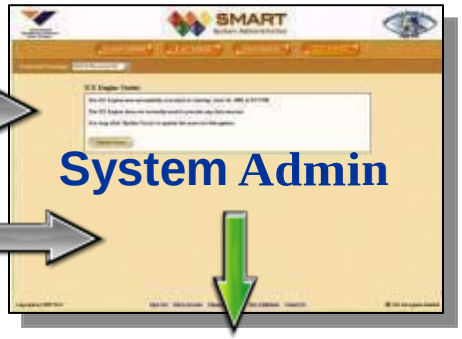
Program Internal Data

Configuration Data (ICAPS, BOMs, IPB, etc)

Sponsor Owned Assets (OEMs, Internal DBs, ERP, etc)

Intelligent Content Engine (ICE)

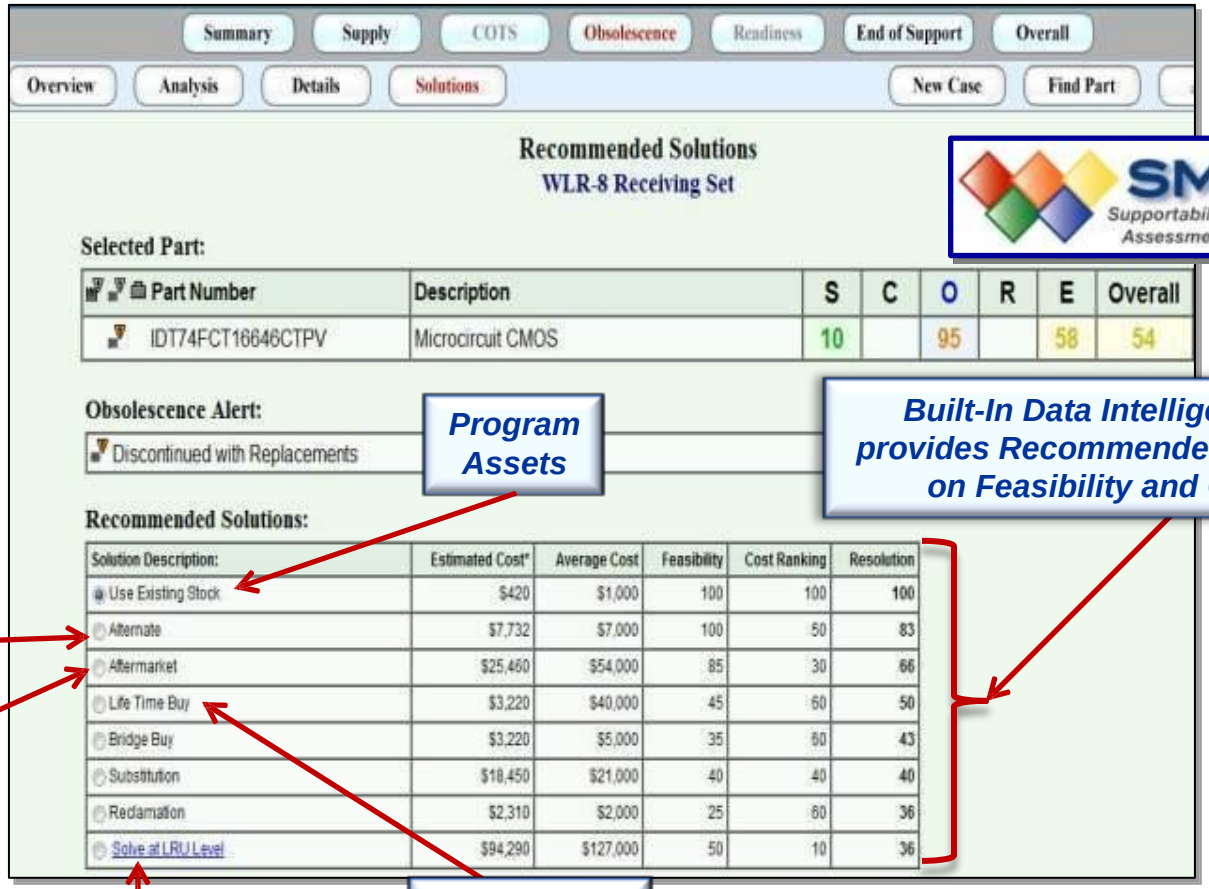
- Enriched Content with DMSMS Logic and Ranking
- Data Integration bundled in a Single Source Solution



Program Stakeholders (Web-based Collaboration)

- Alerts with SCORE Ranking
- Detailed Reporting & Analysis
- End of Support Predictions
- Case Management & Solutions

Automated Solution Assessment



SMART
Supportability Management Assessment Report Tool

Q-Star™

IHS 4DOnline
CAPS Universe

ILS

Program Assets

Built-In Data Intelligence and Logic provides Recommended Solutions based on Feasibility and Cost Ranking

Alternate Part FFF Options (Dual Sources)

Aftermarket Asset Visibility

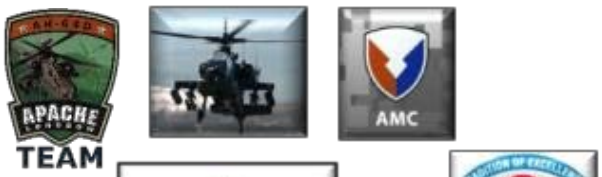
Next Higher Assembly BCA Analysis

Integrated Supply Data

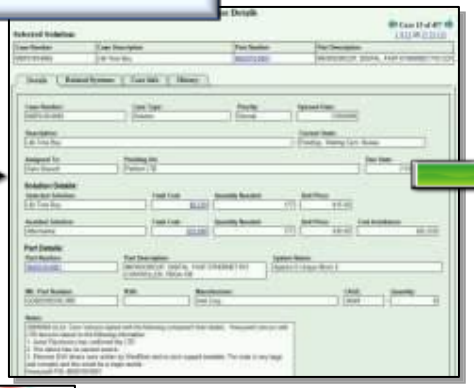
DEFENSE LOGISTICS AGENCY

SMART - Supportability Mgmt Process

- ***Proactive Supportability Management Solution Process***
- ***One Team DMSMS Approach & Collaborative Software***
- ***Case Management Closed Loop Decision Support***
- ***Lower Cost Of Ownership with increased Readiness***
- ***Optimized Solutions with Substantial Cost Avoidance***
  - ✓ *2009 Apache DMSMS Team Achievement Award*
  - ✓ *2011 Boeing Obsolescence Working Group Atlas Award*



Common Program Tool with Case Management



Cost Avoidance Metrics

Solution Description	Solution Count	Solution Cost	Cost Avoidance - Program Actual
Repair Non-RFI (Auth-Warranty)	10	$55,552.50	$908,300.00
Reclamation	5	$65,254.35	$723,706.00
Aftermarket	2	$76,029.15	$250,150.00
Substitution (Tech. Insertion)	1	$77,070.00	$188,330.00
Use Existing Stock	3	$14,904.80	$182,857.00
Redesign - Minor	1	$99,468.75	$112,490.00
None	1	$0.00	$105,655.00
Life Time Buy	1	$34,627.75	$91,070.00
Alternate (Tech. Refresh)	2	$3,590.00	$47,330.00
Total	**26**	**$426,497.30**	**$2,609,888.00**

On-Going DMSMS Closed Loop Process

Supplier Teaming and Collaboration

L3 communications

Honeywell