



INSTITUTE FOR DEFENSE ANALYSES

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How Value Management Can Pay for Diminishing Manufacturing  
Sources and Material Shortages (DMSMS) Management

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October 2014

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# How Value Management Can Pay for DMSMS Management

DMSMS Annual Conference  
San Antonio, Texas  
December 1-4, 2014

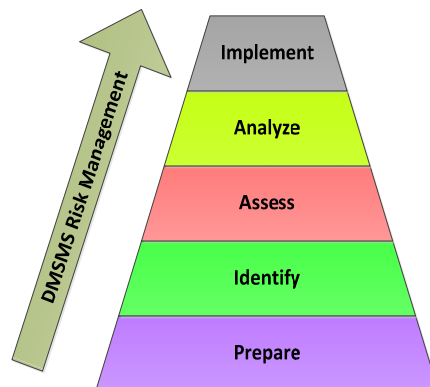


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Christina Patterson, Institute for Defense Analyses



## DMSMS Management Overview

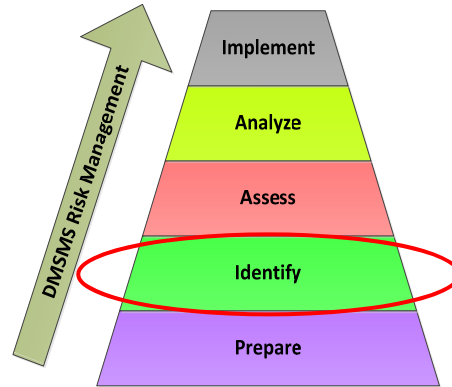
- **Prepare:** Establishment of a DMSMS management program infrastructure
- **Identify:** DMSMS monitoring and surveillance
- **Assess:** DMSMS impact assessment
- **Analyze:** Resolution determination
- **Implement:** Implementation of DMSMS resolutions



## A Key Element of DMSMS

- What items should the program monitor on the systems/sub-systems of interest?

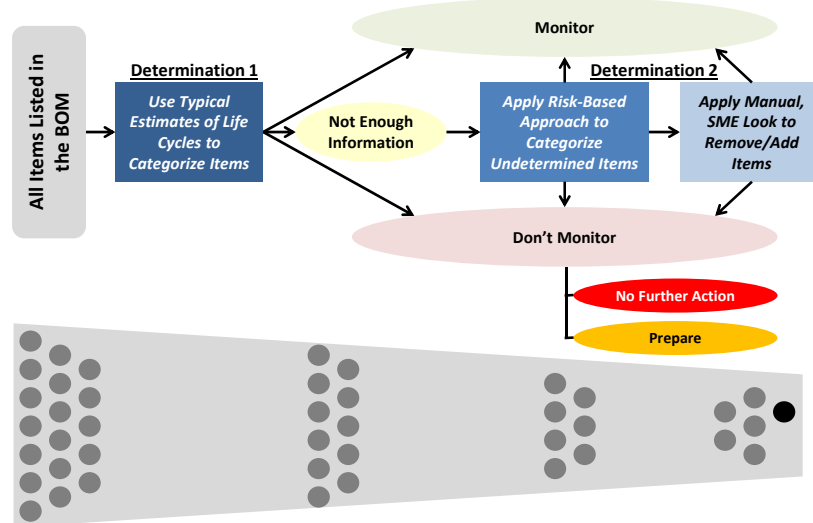
1. Determine the heuristic algorithms to use to identify the families of items to definitely monitor
2. Determine whether to further analyze uncategorized items



These two determinations affect—  
Cost and Risk

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## Identify: Item Data Preparation Overview



Number of Items Under Consideration for Monitoring

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## Identify: Framework for a Risk-Based Approach— *Determination 1* (1 of 2)

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- Apply heuristic algorithms to categorize the items as—
  - *Definitely monitor*: Item types with a high propensity for DMSMS issues, e.g.,—
    - Electronic COTS assemblies (e.g., networking gear, computers, active components, radiofrequency components, programmables, memory, microprocessors, ASICs, hybrids, and custom electronic assemblies)
    - Sole-source items that are in low demand
    - Custom passive items
    - Materials with chemical properties that are a function of the design, are sole source, or otherwise threaten the environment
    - Electro-mechanical items
  - *Don't Monitor*: Item types that are standard industrial items, e.g.,—
    - Mechanical components
    - Connectors
    - Cabling
    - Consumables
  - *Not enough information to determine whether to monitor*

Results in an initial categorization of items listed in the BOM

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## Identify: Framework for a Risk-Based Approach— *Determination 1* (2 of 2)

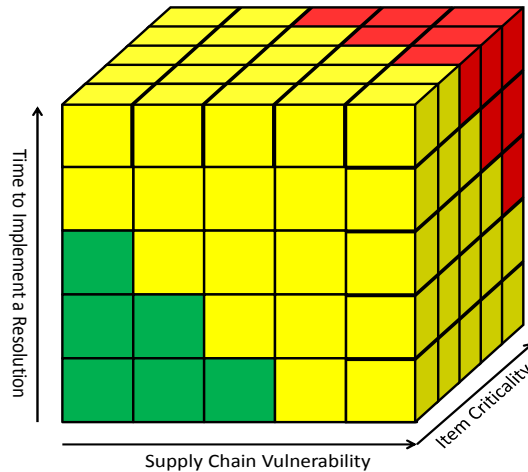
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- Options for deciding what to do about the uncategorized items from Determination 1
  - Monitor ALL uncategorized items (Low risk, High monitoring cost)
  - Conduct further analysis of uncategorized items to determine what to monitor; Commence Determination 2
  - Do not monitor any uncategorized items (High risk, Low monitoring cost)

**BEST PRACTICE:**  
The middle option—Optimizes risk and monitoring cost, but there are start-up expenses

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## Identify: Framework for a Risk-Based Approach— *Determination 2* (1 of 3)



**Where is proactive monitoring of uncategorized items important?**

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## Identify: Framework for a Risk-Based Approach— *Determination 2* (2 of 3)

Item Criticality	Supply Chain Vulnerability	Time to Implement Resolution
<ul style="list-style-type: none"> <li>Critical safety item</li> <li>Mission criticality</li> <li>Item essentiality code</li> <li>High demand (perhaps 10%)</li> <li>High cost</li> </ul>	<ul style="list-style-type: none"> <li>Source related</li> <li>Financial health of supplier</li> <li>Persistent backorders (over period of time)</li> <li>Long customer wait-time (perhaps top 10%)</li> <li>Recent significant price increase</li> <li>Time since last order (perhaps if more than 3 years)</li> <li>Low demand</li> <li>Life cycle of the item</li> </ul>	<ul style="list-style-type: none"> <li>TDP availability for mechanical item or availability of material specification for engineered material</li> <li>Source controlled</li> <li>Manufacturing difficulty</li> <li>Long lead time to requalify</li> <li>Manufacturing cycle time</li> <li>Availability of tooling and test equipment</li> <li>Cost to implement resolution</li> <li>Defense unique</li> </ul>

**Apply the risk cube to determine those previously uncategorized items that are high risk; this is where the principal start-up expenses would be incurred**

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## Identify: Framework for a Risk-Based Approach— *Determination 2* (3 of 3)

- Manually adjust the “Monitor” and “Don’t Monitor” lists, based on—
  - An assessment of considerations that are not available from an automated database
  - Any known vulnerabilities, such as items on the platform:
    - That members of the DMT know to be a problem
    - Where there are pending environmental or safety regulations that may limit their availability and use in any area of the world where the system operates

Could apply whether or not the risk cube is conducted

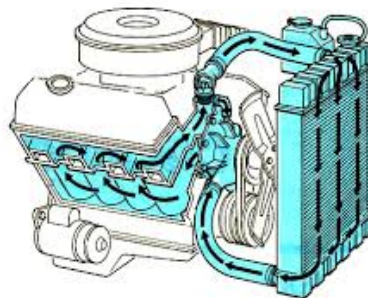
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## Start-Up Expenses Can Be Offset

- VE provides a systematic approach for achieving such cost savings

### EXAMPLE

- An engine cooling kit was being purchased from a single source for \$33,000 per kit
- This price was considered high and the kit was subject to long lead times
- Through reverse engineering, 9 prototype kits were purchased at \$13,950 per kit
- Resulted in a 58% savings per kit; even greater savings could be expected if the tech data package was made part of the competitive RFP



DLA Value Management does this routinely and YOU could benefit from it

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## **DLA Value Management (VM)**

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- **Elements of VM**
  - **In-House Value Engineering**
  - **Reverse Engineering**
  - **Alternate Sourcing/Breakout**
  - **Should Cost**
  - **Sustaining Engineering**
  - **Price Challenge Program**

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## **Reverse Engineering (RE)**

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- **Consists of examining an item to determine its:**
  - **Function**
  - **Material composition**
  - **Properties**
  - **Other salient characteristics**
- **Results in development of technical data adequate for competitive procurement**
- **Performed in-house or by contractors**

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## RE – Free Fall Chute Liner, P-3 Sonobouy

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- OEM would no longer manufacture leaving no source of supply and potential backorders
- DLA obtained a used sample from Navy for RE
- Produced drawing and identified source who had previously manufactured item
- Navy approved drawing and new vendor
- Backorder situation was avoided with warfighter support continued



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## Replenishment Parts Purchase or Borrow (RPPOB)

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- Commonly referred to as Bailment
- Statutory Requirement
  - Public Law 98-525, Section 1216(a)
  - Codified at Title 10 U.S.C. 2320(B)
- Promotes full and open competition
- Contractor may purchase or borrow an item of supply (non-competitive status)
- Performs reverse engineering
- Allows contractor to bid on future contracts
- Contractor must be a domestic business concern
- DLA Aviation and DLA Land and Maritime have parts catalogs available on their websites

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## RPPOB – C-130 Motor Armature

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- Item was sole source with a PLT in excess of 200 days
- VM coordinated with a New vendor to RE the part
- PLT was decreased by 50 days.
- Achieved a \$300 per unit



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## Alternate Sourcing/Breakout

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- Alternate Sourcing Increases Competition and reduces the price of an item
- Two ways to provide additional sources:
  - Find and qualify additional manufacturers (via Source Approval Requests)
  - Develop fully competitive data packages

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## Source Approval Requests (SAR)

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- A SAR is a contractor's proposal to supply technical data on a specific item of supply in an effort to become an approved source
- Submitted packages must be IAW DLAD 52.217.9002
- Offerors must furnish complete copies of all drawings, technical specifications and testing data required to clearly describe the characteristics and features of the item being offered.

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## New Source Development/SINGARS Antenna

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- Antenna was sole source and appeared to have an excessive unit cost.
- VM worked to approve a new source
- Standard unit price dropped from \$2,361 to \$1,288
- \$73M acquisition savings realized over six years
- Savings passed on to our Army customers



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## Should Cost

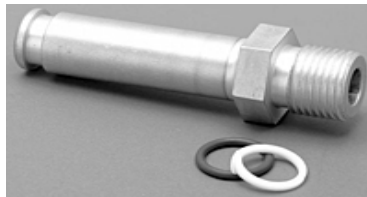
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- **Intrinsic Value Analysis**
  - **Materials, Labor, Testing, Packaging, Manufacturing Changes, Overhead and Profit**
- **Assists Procurement in Determining if a Contractor-Quoted Price is Fair and Reasonable (Supports Contract Negotiations)**
- **Excessive price could be due to sole source**

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## Should Cost/Pump Piston Assembly

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- **Procurement specialist questioned the quoted price of \$685 each for this item; price escalated 200% from previous buy.**
- **Should cost analysis revealed a price of \$126 Per unit and price was successfully negotiated down.**
- **Procurement savings of \$2.5M realized over a ten year period.**

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## **FY 2014 VM Savings**

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- **During FY 2014 DLA saved \$282M**
- **Breakout/alternate sourcing savings = \$101.4M**
- **RE/RPPOB savings = \$6.3M**

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## **DLA VM Program Summary**

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- **DLA VM focuses on providing solutions on problem parts and reducing acquisition and support costs**
- **Tools such as RE, RPPOB, and alternate sourcing can minimize DMSMS risk and provide substantial savings**
- **Savings resulting from these efforts can offset expenses incurred to minimize DMSMS**

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## DLA VM Information

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- **DLA Aviation:**  
<http://www.aviation.dla.mil/UserWeb/aviationengineering/Engineering/valueengineering/valueengineering.asp>
- **DLA Land and Maritime:**  
[http://www.landandmaritime.dla.mil/offices/value management/](http://www.landandmaritime.dla.mil/offices/valuemanagement/)
- **HQ DLA: Mary Hart: [Mary.Hart@dla.mil](mailto:Mary.Hart@dla.mil)**  
**Phone: (703) 767-1637**

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## Conclusions

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- **The VM methodology benefits DMSMS management in four distinct ways:**
  - **It can provide a resolution to existing DMSMS issues**
  - **The resolution may cost less than what you were paying when the item was available**
  - **Supply Chain risk can be reduced prior to a DMSMS case**
  - **You might even be able to save money just by reducing risks**

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## Questions?

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<b>14. ABSTRACT</b> The programs of the Department of Defense (DOD) have traditionally focused their Diminishing Manufacturing Sources and Material Shortages (DMSMS) management efforts on electronic items. From a risk-based perspective, this is a decision based on the realization that the relatively short life cycles of electronic items virtually guarantee obsolescence at some point, if not multiple points, during the life cycle of DOD systems. DOD guidance and government and private sector data bases and predictive tools have focused predominately on DMSMS management of electronic items as well. The reality, though, is that DOD systems contain items other than merely electronic ones and any item type can experience obsolescence. Facing budget constraints, a program's decision to pursue a more comprehensive approach to DMSMS management is not without challenges. This briefing describes how a program can apply a risk-based approach to identifying which materials (including critical materials located in the lower tiers of the supply chain) and which mechanical items cause the most potential concern. Therefore, the program should be proactively monitored.					
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