Cross-Service Collaboration Yields Management Efficiencies for Diminishing Resources

By Jay Mandelbaum, Tina M. Patterson, Chris Radford, Allen S. Alcorn, and William F. Conroy

Diminishing manufacturing sources and material shortages (DMSMS) remain a very significant issue for the Department of Defense, with significant resources committed to limiting the problem. Given the long lives of DoD systems relative to the items and technologies used to build and support them, DMSMS problems are inevitable. There is good news, however: proactive DMSMS management can reduce the cost of resolving those problems.

How does proactive DMSMS management help? It's all about the window of opportunity to do something about emerging DMSMS issues. Proactive DMSMS management reduces cost by identifying issues as early as possible through a risk-based monitoring of items in the system. If a program does not discover a DMSMS issue until there is a failed attempt to buy an item, resolution options often are limited and usually only more expensive alternatives are feasible. Proactively identifying issues as soon as information about them becomes available usually increases the number of resolution options available and creates opportunities for an increased number of lower-cost alternatives because there is more time to fix the problem before an impact occurs.

This article illustrates DMSMS management efficiencies achieved via collaboration between the Naval Air Systems Command (NAVAIR) and the U.S. Army Aviation and Missile Research, Development, and Engineering Center (AMRDEC). These efficiencies lead to greater team proactivity and, ultimately, lower DMSMS resolution costs for the partnering organizations.

The DoD guidebook, SD-22, *Diminishing Manufacturing Sources and Material Shortages: A Guidebook of Best Practices for Implementing a Robust DMSMS Management Program*, provides comprehensive information for DoD components on mitigating the risks associated with DMSMS issues. It defines DMSMS as "the loss, or impending loss, of manufacturers or suppliers of items, raw materials, or software." The SD-22 also defines DMSMS management as "a multidisciplinary process to identify issues resulting from obsolescence, loss of manufacturing sources, or material shortages; to assess the potential for negative impacts on schedule and/or readiness; to analyze potential mitigation strategies; and then to implement the most cost-effective strategy." (http://www.acq.osd.mil/se/docs/SD-22-DMSMS.pdf)

Cross-Service Collaboration

NAVAIR's DMSMS management team is the logistics technical authority responsible for the development, sustainment, and execution of NAVAIR DMSMS and obsolescence management policy and processes. Its mission is to mitigate the impact of obsolescence and DMSMS issues on total ownership cost by providing relevant subject-matter expertise to NAVAIR program management offices. The AMRDEC Obsolescence Engineering team includes more than 40 engineers and researchers who develop obsolescence engineering strategies and constantly monitor products and parts availability issues. Since 1987, the team, located within AMRDEC's

Engineering Directorate, has supported aviation and missile programs combating the ever-present threat of obsolescence.

Both collaborating organizations previously performed similar functions independently—they both apply tools and resources as part of their support to programs. For example, the teams' research functions do the following:

▌ Facilitate the analysis of bills of materials (BOMs) using a suite of predictive tools primarily for monitoring electronic parts.

▌ Perform market research by contacting the applicable vendors to ensure that accurate data (e.g., points of contact, pricing, end of production) are obtained for mechanical and commercial off-the-shelf parts.

▌ Access the original equipment manufacturer and aftermarket manufacturer websites.

▌ Access federal supply sources such as the Defense Logistics Agency (DLA), Land and Maritime, Standard Microcircuit Cross Reference, and Qualified Products Database as well as additional commercial tools.

The need for a centralized database or tool to facilitate these research functions and disseminate the results became evident as the number of programs supported by the NAVAIR DMSMS team grew. After evaluating a range of potential options, NAVAIR selected the Multifunctional Obsolescence Resolution Environment (MORE) tool-database to meet its needs. MORE is a government-owned engineering analytical obsolescence and DMSMS management information system developed and maintained by AMRDEC. MORE centralizes workflow for researching the status of electronic parts; accessing availability data, analysis results, and discontinuance alerts; and compiling and disseminating information gleaned from subject matter experts.

While the possession of these capabilities influenced the selection of MORE, an even greater factor in favor of MORE was AMRDEC's willingness to truly partner with the NAVAIR team. Thus, cross-service DMSMS management collaboration was born! The following illustrates examples of the synergies that have already been gained via this real-world, joint, multi-service DMSMS–obsolescence partnership.

Benefits of the Collaboration

During the first year of partnering, the MORE parts library increased in size by approximately one third when the NAVAIR parts were included. Further increases are anticipated because only a small portion of the total NAVAIR BOMs was loaded initially. From the perspective of NAVAIR alone, when those initial BOMs were loaded, more than 15 percent of the parts were already common to the AMRDEC and had been researched and were in the MORE library. This 15 percent likely will increase because many of the NAVAIR parts must be researched before determining whether they are in the parts library.

With an expanded parts library, there is a greater likelihood that any parts investigated by new AMRDEC or NAVAIR customers will not only already be in the library, but can also be automatically researched. And this provides a significant time savings over a manual process. In fact, beyond the 15 percent commonality, many of the initial NAVAIR unique parts were automatically researched by MORE. Finally, the increase in the MORE parts library leads to an increased number of parts added to subscription tools that underlie MORE. Over time, this will increase the recognition rate of the parts libraries within the subscription tools.

According to Chris Radford, NAVAIR Obsolescence Management Team technical lead, "The MORE library when combined with the AMRDEC team provides a service and capability that no one else in the industry provides. It's a one-stop shop with a program designed around MORE that provides not only complete documented work instructions from part research to program management of DMSMS, but also a unique part auditing program that ensures that bad data and research are not added to the library, either willingly or unwillingly.

"This is the key to a successful DMSMS program," Radford added. "No matter what tools you use, there is a high percentage of false data that exists. The MORE process is constantly reducing this bad data to ensure that its contents are more accurate than any other tool because the data is validated. This proactive management process is the key to DMSMS cost avoidance based on program efficiency. Most programs are still searching for the individual part metrics, hoping to save big dollars, not realizing that the manpower costs they are spending to reactively solve these problems generally offset the costs saved. Good DMSMS programs don't save their customers money overnight—rather, they establish a consistent program that enables the customer to proactively manage all of their parts and systems and streamline future efforts."

Both NAVAIR's and AMRDEC's proficiencies have increased as a result of the collaboration. Although NAVAIR also uses other tools to facilitate the research and identification of alternate parts and part statuses, MORE leverages the information provided by those tools. It enhances and compares their outputs, thereby providing the user with more accurate parts availability statuses.

The AV-8B ground-attack aircraft program offers several examples of efficiencies already realized because of the partnership. The AV-8B leveraged AMRDEC DMSMS training documentation not only to train new staff on how to use MORE, but also on how the parts research process works. The MORE partnership allowed the AV-8B team to streamline its obsolescence team, process, and structure; it is now managed by a small core group, reducing costs from $633,000 in FY 2014 to $290,000 for FY 2017.

According to Jesse Powell, the AV-8B obsolescence manager, "Collaboration and leveraging existing processes and tools across the services should be our number 1 goal. We often spend too much time doing our job that we forget that there are other services within DoD that may have already solved the problem. The Army and NAVAIR collaboration through the MORE tool is just one example of how we (all DoD) can work together to reach a common goal. The AV-8B program at

NAVAIR has shown that collaboration can lead to saving for the program office, and I look forward to continuing this collaboration into the future."

AMRDEC's part research proficiency has also improved as a result of the NAVAIR addition of a large number of Military Specification (MILSPEC) items into the MORE database. In addition, NAVAIR input on AMRDEC processes helped to further refine and enhance MORE processes. Specifically, NAVAIR reviewed and provided comments on MORE's MILSPEC work instruction and is collaborating on requirements for a MORE sustainment module currently in development.

Michele Ozier, a team lead at AMRDEC and in particular the AMRDEC lead for the NAVAIR collaboration, spoke of the mutual benefits of the combined efforts: "We at AMRDEC are excited to collaborate with NAVAIR. We believe that the resulting identification of commonality, standardization of processes, shared ideas, and synergy will be a great benefit to both organizations, and most importantly, to our customers—the warfighter."

MORE can also facilitate determining resolution options to DMSMS problems through a capability to view all platforms that are using a given part. Consequently, when a program office is trying to determine the most cost-effective resolution to a common problem, it can easily identify what other platforms have done and take advantage of those efforts.

Taking Collaboration to the Next Level

The AMRDEC–NAVAIR collaboration in the use of the MORE tool represents just one of eight strategic objectives being pursued to expand collaboration across the whole DoD enterprise. Another of those objectives is commonality. The goal of this strategic objective is to demonstrate the value (including reduced costs, improved program schedule, and other efficiencies) of a proactive DMSMS program leveraging information sharing. This objective was created in recognition of lost opportunities for common resolutions. Data sharing previously occurred only within a service among the customers of the same independent DMSMS management provider, between the users of common tools, or as a result of periodic meetings of various working groups. Sharing also occurred across DoD where common resolutions were developed for DLA-managed electronic items or in rare instances, such as tungsten-rhenium wire, when it was determined that an enterprise resolution was preferred.

A third strategic objective deals with the establishment of DoD centers of excellence. When a DMSMS problem occurs, resolution options are analyzed to determine the most cost-effective approach. The comprehensiveness of the analysis depends primarily on a program office's experiences with the capabilities of resolution providers. This experience is typically limited because program offices often limit their choices to only the subset of potential service providers that they commonly work with. The goal of this strategic objective is to create an easy-to-use database of a large number of service provider capabilities that program offices can use to help determine the most cost-effective approach to resolving DMSMS issues.

These strategic objectives are only achievable through various forms of partnerships. The NAVAIR and AMRDEC partnership is not just one example, but a first step. Robin Brown, the DoD DMSMS/obsolescence lead, said, "I want to make the case for us to build on this partnership to include not only all DMSMS management across DoD but also the resources that DMSMS practitioners rely upon to resolve problems." Benefits are already being witnessed through the NAVAIR–AMRDEC partnership; therefore, it is credible that further benefits can be realized by expanding the collaboration further across the DoD enterprise.

Conclusion

While the services use numerous unique systems and platforms, it is important to understand that many common components exist on these systems, regardless of function, application, or the environments in which they perform. In the past, because of how programs are segregated and managed, these common parts were likely monitored and researched independently by multiple programs or not tracked at all. This has resulted in duplicated effort and inefficient use of resources. Collaboration, enabled by a centralized database, delivers benefits to all players involved in component research and mitigation by reducing time and cost and by using a team of subject matter experts (rather than a single person) to participate in reducing DMSMS risks. These efficiencies lead to improved proactive DMSMS management and thereby decreased DMSMS management and resolution costs.

About the Authors

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