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Space Command Sustainment Review

Improving the Balance Between Current and Future Capabilities

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Summary

The ability to access and continuously operate in space is vital to economic, social, and military interests of the United States. Sustaining space capabilities is a complex undertaking. In this monograph, we examine options for improving AFSPC support and sustainment of U.S. Air Force space systems by evaluating the effectiveness and efficiency of current policies related to processes, force development, doctrine, information systems and tools, and organization from a command perspective.

The purpose of this monograph is to examine options for improving the sustainment of U.S. Air Force space systems, not by evaluating individual systems but by looking across AFSPC. By understanding current policies, we are able to suggest improvements in process, training and education, doctrine, systems and tools, and assignment of responsibilities from a command perspective. To this end, we used an expanded strategies-to-tasks framework as a "lens" for evaluating space system sustainment policies.[1] This expanded framework incorporates resource allocation processes and constraints in space system sustainment considerations. It also describes how space system sustainment resources and processes can be related to space capabilities and joint operational effects.

Finally, we evaluate options for improving space sustainment and provide both near- and longer-term implementation recommendations. Because space systems are very diverse and because the analysis time

[1] More-detailed information can be found in Appendix A.

frame was limited to six months, we use two example systems—the Global Positioning System and the Eastern and Western Range capabilities—to illustrate how the strategies-to-tasks framework can be applied across AFSPC sustainment practices.

Conclusions and Recommendations

The strategies-to-tasks framework provides a rationale for developing a commandwide philosophy for supporting space systems. The strategies-to-tasks framework prescribes separation of demand-side, supply-side, and integrator processes—which are often nested. Supply, demand, and integrator roles are not only defined at the execution level but also exist at other levels—both within and outside the command. Roles and responsibilities should be defined at all levels, stressing the importance of all three aspects of the strategies-to-tasks framework. Using a strategies-to-tasks framework and philosophy to separate supply, demand, and integrator processes to improve the effectiveness and efficiency of space system sustainment is an important first step. Once these responsibilities are separated, many other improvements can be made. The adoption of this philosophy can provide a basis for enhancing processes, force development, doctrine, information systems, and organization across the command that can be sustained over time and through many leadership changes.

Process Improvements

Once the strategies-to-tasks framework and philosophy have been adopted, many other processes improvements can be made. For example, the 30th Space Wing (SW) quality assurance (QA) process and supporting management information system (MIS) "best practices" could be adopted at other SWs. In addition, the QA MIS could be expanded to include system performance metrics, as well as the contract performance metrics it already contains. Reliability-centered maintenance practices should also be expanded within AFSPC beyond infrastructure-type equipment to include primary mission-equipment systems. Again, the 30th SW's experience in this area can provide the other wings with a model that they could tailor to their specific needs. (See pp. 21–37.)

The Integrated Priority List (IPL) used at the ranges could be expanded and implemented at nonrange wings. The process should be formalized to help wings identify, validate, approve, control, prioritize, and monitor the status of upgrades and modifications to space systems. In addition, a process for prioritizing and tracking sustainment resource requirements across the command (like a "super-IPL") could be established. This super-IPL could track all funding, including the sustainment money received from other agencies.

Finally, metrics need to be developed that relate sustainment resource needs to operational effects. Current metrics address individual system components and support with respect to that system. However, these metrics reflect past performance or effects or present report-card types of data. They do not provide predictive or leading indication of future issues that may arise within the space system. A focus on supply-and-demand metrics needs to be encouraged and can lead to improvements in metrics from the demand, supply, and integrator perspectives. The integrator may need an analytic arm to weigh demand- and supply-side inputs and provide a neutral viewpoint.

Force Development, Doctrine, and Information Systems and Tools Improvements

Development of civilian, officer, and enlisted logistics and communications leaders with space experience is essential to the success of the AFSPC mission. The strategies-to-tasks framework would suggest that maintenance be managed from supply-side organizations. This structure would provide a clear career path for support management and growth and provide a source for advocating career development and advancement up to commanding the maintenance group. (See pp. 39–44.)

A new program is being established with a developmental identifier to track space expertise as a step toward vectoring officers to AFSPC positions at appropriate points in their careers. Noncommissioned officer (NCO) development could benefit from more focused training in space systems to augment the Harris-type short courses, as well as some additional training and education in interpreting contractual documents for NCOs engaged in quality assurance evaluation. Space credentialing may also offer benefits for force management. At a minimum, special experience identifiers for space systems should be developed and applied to facilitate filling key space jobs in the officer and enlisted ranks. The civilian workforce could also benefit from credentialing space logisticians.

Although progress has been made in expanding doctrine to address support functions, support doctrine is not as robust as operational doctrine. In addition, space support doctrine is not as mature as aircraft support doctrine. AFSPC can make significant contributions by defining and inserting space support doctrine into Air Force publications and U.S. Strategic Command support doctrine into joint publications. AFSPC could work with Headquarters Air Force Directorate of Logistics Readiness, ACS Doctrine, and Wargames Division (AF/ILGX) to develop new Air Force Doctrine Document 2-4 subpublications and identify demand, supply, and integrator roles. The development of the strategies-to-tasks framework that outlines the philosophy for separating supply-side, demand-side, and integrator functions would contribute to doctrine and show how aircraft, missile, and space systems can follow the same philosophy in support, even if the specific implementations vary to some extent based on mission specifics, nature of systems, or history of support—organic or contractor—at both the service and joint levels.

Not all space systems provide the same level, in depth or breadth, of maintenance data collection and system and component status reporting as we observed in the Quarterly Sustainment Review or during similar forums for other systems. Standardization of data collection and reporting may be less important than standardized metrics. The critical issue is the ability to obtain key performance metrics so that trade-off decisions on where to invest sustainment dollars can be made if resources are constrained. These trade-off decisions should be based on collecting similar information about all the systems, so that like comparisons of metrics can be made.

More work can also be done on developing leading indicators. These indicators should underscore the cause of the resulting effect before the effect happens so that the indicators may be used for prediction. Decisionmakers should be able to focus their attention on future problems by using leading indicators.

In addition to metrics, sustainment actions and the effects of not performing them when necessary should be tracked. Many of the typical indicators (leading and lagging) can be used to prioritize sustainment actions better if properly integrated with acquisition schedules and operational schedules (planned). Others can be used to gauge contractor performance and award fees. Making trade-off decisions when resources are constrained requires having both measurements and metrics. Reliability-centered maintenance actions should be tied to these metrics as well.

Organizational Structure Improvements

Understanding the benefits of adopting the strategies-to-tasks framework and philosophy is important. If the benefits are explicitly recognized, organizational structure may not be as important. However, fully realizing the benefits of the philosophy based on the strategies-to-tasks framework means developing an organizational structure by following the philosophy. (See pp. 45–66 and Appendix B.)

Organizational changes at the headquarters have been made in accordance with the strategies-to-tasks framework, although this was not specifically recognized as strategies-to-tasks philosophy at the time. The organization of the space wings could follow suit—employing an integration function at either the group or wing, or by creating a maintenance group—to improve the balance between current readiness and future readiness to support operations.