DOD Space Acquisition Management and Oversight

Information Presented to Congressional Committees

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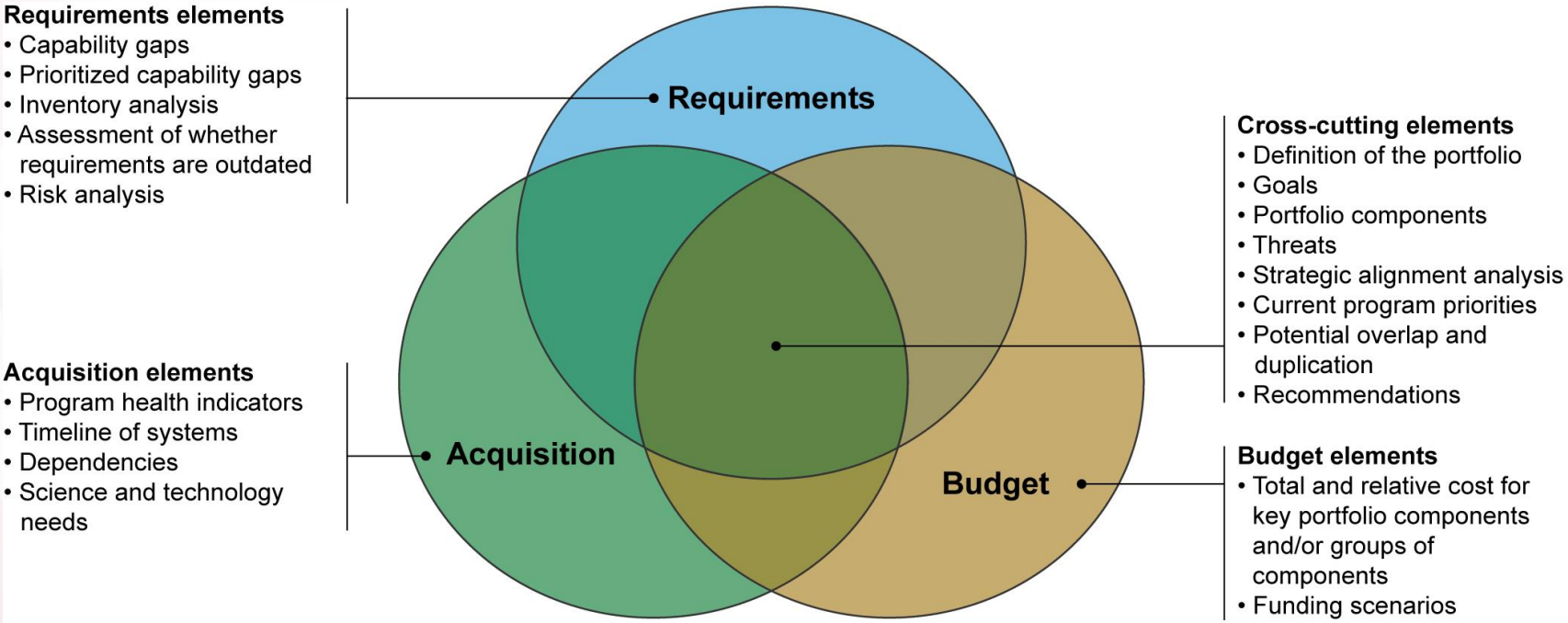
Introduction

- DOD space systems provide critical capabilities that support military and other government operations, including communications; missile warning; positioning, navigation, and timing; and intelligence information. Military space systems are primarily developed and acquired by the Air Force, and intelligence community (IC) space systems by the National Reconnaissance Office (NRO). These systems can take a long time to develop and are expensive to acquire and field. For example, a single satellite can cost from $500 million to over $3 billion and the cost to launch the satellite can climb to well over $100 million.
- We and others have reported for over two decades that fragmentation in DOD space acquisition management and oversight have contributed to program delays and cancellations, cost increases, and inefficient operations. We have also found that DOD weapon system acquisition processes are typically focused on individual programs rather than assessing investments collectively, as best practices recommend, and do not effectively integrate information from the requirements and budget processes.[1] Figure 1 shows the effective integration of these processes.

[1]GAO, *Weapon System Acquisitions: Opportunities Exist to Improve the Department's Portfolio Management,* GAO-15-466 (Washington, D.C.: Aug. 27, 2015).

Introduction *(continued)*

Figure 1: Effective Portfolio Reviews Integrate Information from the Requirements, Acquisition, and Budget Communities



Source: GAO analysis of GAO-07-388, *PMI Standards on Portfolio Management*, and DOD policies. | GAO-16-592R

- We have found that the three processes are largely stove-piped in practice for DOD, resulting in most investment decisions being made on a piecemeal basis and limiting its opportunities to better leverage its resources and adjust to strategic changes.

Introduction *(continued)*

- While this review primarily focuses on the processes by which space acquisitions are managed and overseen, we also discuss relevant requirements and budget process-related factors, given the closely interrelated nature of the three processes. Discussions about U.S. goals for space frequently include the civilian agencies such as the National Aeronautics and Space Administration (NASA) and the National Oceanic and Atmospheric Administration (NOAA) as well, but the scope of this review is limited to DOD and intelligence space systems.
- In Senate Report 114-49 accompanying S.1376, a bill for the National Defense Authorization Act for Fiscal Year 2016, the committee noted that it has grown concerned by the disjointed nature of DOD space system acquisition and acquisition oversight. The report included a provision for us to assess the effectiveness of DOD's space acquisition and oversight.

Objectives

This briefing addresses the following questions:

1. What organizations are responsible for DOD's management and oversight of space system acquisitions?
2. What recommendations have been made for improvements to DOD's management and oversight of space acquisitions over the last two decades, and what major changes have occurred in that time period?
3. What persistent challenges, if any, has DOD experienced in its management and oversight of space acquisitions, and what changes could be considered for improvement?

Scope and Methodology

- To determine the organizations responsible for DOD's management and oversight of space systems acquisitions, we obtained and reviewed relevant DOD documentation outlining various organizations' roles and responsibilities in national security space activities and in current and planned DOD space efforts. In addition, we interviewed officials with space-related responsibilities from various organizations (listed at the end of the briefing) to obtain an overview of current defense space acquisitions and oversight and identify stakeholders.
- To determine recommendations and changes that have been made to improve management and oversight of space acquisitions, we selected a nongeneralizable sample of 17 experienced space industry professionals based on recommendations from current and former DOD, congressional, and industry officials, and interviewed them on their opinions on what the most important recommendations and changes have been in the last 20 years. Based on these interviews, we identified four major studies on the topic of space management and oversight, and we analyzed these studies for their recommended changes and to determine how many of those recommendations were adopted by DOD, including identifying what changes were made to space acquisitions and oversight organizations. Most experts agreed that these were the most important studies on the topic; therefore, we did not attempt to duplicate the studies' analyses. We reviewed other studies, including prior GAO reports, that assessed problems with past space acquisitions and management. We also analyzed applicable DOD directives and memorandums to determine changes in space-related organization authorities and responsibilities.

Scope and Methodology *(continued)*

- To assess the persistent challenges DOD has experienced in space acquisitions and changes that could be considered, we interviewed the DOD officials and industry professionals described earlier and consolidated and synthesized information they shared. We also analyzed information from various relevant studies and commissions and prior GAO reports. We then assessed the information gathered and sent our findings to the 17 experts we interviewed for their review and comment. We defined modifiers (e.g., "many") to quantify interviewees' views as follows:
  - "*some*" individuals represents 3 to 5 individuals,
  - "*many*" individuals represents 6 to 10 individuals, and
  - "*most*" individuals represents 11 to 17 individuals.

Summary

GAO found:

- DOD space leadership responsibilities are fragmented among several organizations. We identified approximately 60 stakeholder organizations involved in space acquisitions. There are eight organizations with space acquisition management responsibilities. While the Air Force has responsibility for most military space acquisitions, the other military services have their own space efforts as well. The NRO collaborates with DOD as it develops space systems for DOD and the IC. Oversight is spread across 11 offices within the Air Force, Office of the Secretary of Defense (OSD), the IC, and OMB. The Secretary of the Air Force, as the newly designated Principal DOD Space Advisor (PDSA), supported by an advisory body called the Defense Space Council, is responsible for promoting a unified approach to space issues, including acquisitions. Lastly, six DOD organizations from the services, U.S. Strategic Command, and the Office of the Joint Chiefs of Staff are involved in setting requirements for defense space programs.
- The organization of space acquisitions and oversight has been studied in depth over the last 20 years. We identified four studies as the most relevant; these studies made 28 relevant recommendations, including that space be made a national security priority with unified leadership and decision-making authority, among other things. In general, DOD has not made significant changes to space leadership over the last two decades. PDSA officials stated that their organization has sufficient authorities and responsibilities to unify decision making across national security space; however, it is too early to evaluate the effectiveness of this change.

Summary *(continued)*

- Many of the leadership problems identified in past studies and GAO reports persist today. Officials and experts we spoke to stated that fragmented leadership in DOD space acquisitions has contributed to poor coordination and lengthy decision making. While these challenges are not limited to space-related acquisition efforts, officials and experts stated that the challenges are magnified in space programs because their technologies are frequently obsolete by the time systems are deployed. Program management and oversight weaknesses we have identified over the past decade further exacerbate the condition. Many officials and experts were skeptical that the recently designated PDSA has sufficient decision-making authority to address leadership concerns; however, many experts and DOD officials—including from the PDSA—stated a strong belief that the PDSA can effectively consolidate fragmented leadership responsibilities. Officials and experts suggested a variety of changes, such as consolidating military and NRO space acquisitions; however, many cautioned that such changes would result in significant short-term disruption to DOD's space roles and responsibilities.

Background

- DOD spends $9 billion-$11 billion a year on non-intelligence space-related efforts. About 90 percent of this funding is managed by the Air Force. Intelligence space program funding is classified.
- For over 20 years, we and various groups have illustrated problems with the way national security space programs were planned for, acquired and managed.
  - In 1993, the House Appropriations Committee report accompanying the fiscal year 1994 defense appropriations bill noted a lack of a coherent management structure associated with national security space programs.[2]
  - In 1994, a GAO report found that space acquisition management responsibilities were fragmented among several organizations.[3]
  - In 2001, a congressionally mandated commission report stated that the current interagency process was inadequate to address the number, range, and complexity of today's space issues, and that the national security space organization and management at the time failed to reflect the growing importance of space to U.S. interests.[4]
  - In 2008, an independent panel report to Congress stated that "without significant improvements in the leadership and management of national security space programs, U.S. Space preeminence will erode to the extent that space ceases to provide a competitive national security advantage."[5]
  - Similar findings have been reported by other groups including the RAND Corporation and the Central Intelligence Agency.

[2]H.R. Rep. No. 103-254 (1993). [3]GAO, *National Space Issues: Observations on Defense Space Programs and Activities,* GAO-NSIAD-94-253 (Washington, D.C.: Aug. 16, 1994). [4]Report of the Commission to Assess United States National Security Space Management and Organization, January 11, 2001. [5]Institute for Defense Analyses, *Leadership, Management, and Organization for National Security Space*, July 2008. This report is generally referred to as the Allard Commission report.

Background: Prior GAO Work

- Over a number of years we have conducted extensive reviews of DOD space acquisitions including launch vehicles, satellite systems, associated ground systems, and user terminals. From a program management perspective, we have generally found:
  - Over the last decade, DOD space system acquisitions have been characterized by the long-standing problem of program costs and schedules increasing significantly from original estimates.
  - DOD's long-standing difficulties on space acquisition programs included technical or design problems, as well as oversight and management weaknesses, such as a tendency to produce optimistic cost estimates.
  - DOD space systems have encountered challenges and issues with synchronizing the delivery of satellites, ground control, and user system capabilities.
- We have made recommendations to improve the management of space systems acquisitions, such as adopting best practices including assuring that development programs' critical technologies are mature and separating technology development from product development. DOD has, in general, concurred with our recommendations.

Background – Prior GAO work *(continued)*

- We have also tied acquisition problems to leadership challenges. Generally, DOD's culture has been resistant to changes in acquisition approaches and fragmented responsibilities in DOD space programs have made it difficult to implement new processes and coordinate and deliver interdependent systems.
- In reviewing the condition of the space portfolio in 1994, for instance, we reported that strong management at a high level within the Executive Office of the President appeared essential to address launch requirements, ensure interagency coordination, cooperation and elimination of duplication, and maintain program and funding stability.[6] This report also found that space acquisition management responsibilities were fragmented among several organizations. We did not make recommendations in that report.
- In 2012, we again reported that fragmented leadership and a lack of a single authority in overseeing the acquisition of space programs had created challenges for optimally acquiring, developing, and deploying new space systems.[7] This fragmentation is problematic not only because of a lack of coordination that has led to delays in fielding systems, but also because no one person or organization is held accountable for balancing government-wide needs against wants, resolving conflicts and ensuring coordination among the many organizations involved with space acquisitions, and ensuring that resources are directed where they are most needed. We proposed that OMB assess whether a government-wide space council or separate organization should be established that would have greater authority for setting priorities than individual departments and agencies, and responsibility for strategic planning. DOD acknowledged the need for a clearer space and acquisition structure; however, OMB did not concur that changes were needed.

[6]GAO-NSIAD-94-253. [7]GAO, *2012 Annual Report: Opportunities to Reduce Duplication, Overlap and Fragmentation, Achieve Savings, and Enhance Revenue*, GAO-12-342SP (Washington, D.C.: Feb. 28, 2012).

Background – Prior GAO work *(continued)*

- Examples of leadership challenges cited in our 2012 report:
  - A 10-year gap between the delivery of GPS satellites and user equipment that could take advantage of new capabilities that was partially the result of fragmented leadership;
  - The cancellation of the National Polar-orbiting Operational Environmental Satellite System (NPOESS), which attempted to converge defense and civil environmental monitoring requirements and avoid duplication through a tri-agency program office but faltered in part because there was no single authority to adjudicate conflicts or set priorities;
  - The Space Radar program, which was intended to be a joint effort between DOD and the IC, but faced significant affordability issues, along with leadership and management challenges that eventually contributed to the program's cancellation; and
  - A 2011 report which found that space situational awareness acquisition efforts experienced challenges due to a lack of government-wide authority. Space situational awareness efforts are designed to mitigate threats to U.S. space systems via a variety of space- and ground-based sensors and systems that detect, track, and characterize space objects and space-related events, and forecast which assets may be at risk.

Background – Prior GAO work *(continued)*

- In 2015, we testified that leadership challenges could, for example, hinder DOD's efforts to examine options for acquisition efficiencies.[8]
  - For example, historically, DOD has procured commercial satellite communications services to augment military capacity and it has become increasingly reliant on these services to support ongoing military operations. DOD is looking for ways to better streamline procurements of these services, but according to DOD officials, it has had difficulty adhering to past policies that required centralized procurement, especially during operations in Iraq and Afghanistan, when efficiency was not a priority.
  - Similarly, DOD was still unable to align the delivery of space system segments in part because control over budget formulation and execution for the segments is spread across the military services and DOD lacks a single authority to ensure programs are funded in a manner that aligns their deliveries. As programs continue to face challenges in aligning components, the warfighter cannot take advantage of full system capabilities, and the large investments into these programs are not fully exploited.
- We have also conducted work on interagency coordination more broadly. In 2005, we identified challenges that cut across various federal agencies.[9] We identified practices which include, among other things:
  - Defining and articulating a common outcome;
  - Establishing mutually reinforcing or joint strategies to achieve the outcome;
  - Agreeing upon agency roles and responsibilities; and
  - Reinforcing agency accountability for collaborative efforts through agency plans and reports.
- In 2012 we further elaborated on key considerations for implementing interagency collaborative mechanisms, such as clarifying roles and responsibilities and bridging organizational cultures.[10]

[8]GAO, *Space Acquisitions: Some Programs Have Overcome Past Problems, but Challenges and Uncertainty Remain for the Future,* GAO-15-492T (Washington, D.C.: Apr. 29, 2015). [9]GAO, *Results-Oriented Government: Practices That Can Help Enhance and Sustain Collaboration among Federal Agencies*, GAO-06-15 (Washington, D.C.: Oct. 21, 2005). [10]GAO, *Managing for Results: Key Considerations for Implementing Interagency Collaborative Mechanisms*, GAO-12-1022 (Washington, D.C.: Sept. 27, 2012).

Background – how space is different from other acquisition areas

DOD space systems are acquired under the same acquisition policies as other weapons systems.[11] However, there are some ways that space systems are different from other acquisitions:

- Space has more programs of joint interest than other areas, and includes varied stakeholders, such as civil agencies and multiple services.
- According to officials, in developing space systems, "you have one shot to get it right"; once a satellite is launched, if there are problems it is essentially impossible to change the hardware, and software changes may not be an option.
- Space programs typically use cutting-edge technologies that have to withstand the harsh space environment, as well as meet DOD requirements for survivability. These are rarely available on the commercial market and must be developed by DOD.
- With space programs, there are various segments—satellites, ground control systems, and user equipment—that rely on each other for the full system to work. These are often developed under separate programs, and the development timelines often do not match up so they are not all available when needed.
- Additionally, each of these segments has historically been expensive, costing billions of dollars to build and launch satellites or field ground systems and user terminals. For example, the Air Force is modernizing the GPS segments at great expense: over $500 million each for eight GPS III satellites, close to $4 billion for the next generation operational control system, and $1.64 billion for designing the first increment of user terminal cards. Consequently, it can be difficult to get buy-in to recapitalize large systems.

[11]DOD Directive 5000.01, "The Defense Acquisition System" (2007) and DOD Instruction 5000.02, "Operation of the Defense Acquisition System" dated January 7, 2015, direct the Defense Acquisition System and provide governing policies.

Background – military and intelligence space programs

Space programs are generally divided into either military or intelligence-funded programs.

- Title 10 and Title 50 establish different authorities and responsibilities for the DOD and IC agencies such as the NRO.
  - DOD has both Title 10 (armed services) and Title 50 (intelligence) authorities. According to officials, most DOD space acquisitions follow DOD acquisition policies and funding processes.
  - NRO space acquisitions utilize Title 50 authorities, and according to NRO, follow IC acquisition policies and funding processes.
- Military intelligence programs (MIP) are funded through DOD, and national intelligence programs (NIP) are funded through the Office of the Director of National Intelligence (ODNI).
  - The House Permanent Select Committee on Intelligence has oversight over the NIP and the MIP, and the Senate Select Committee on Intelligence has NIP jurisdiction. They share this jurisdiction for the MIP with the Senate and House Armed Services Committees.
  - According to NRO, most NRO programs are NIP-funded; a small number of NRO programs are jointly MIP-NIP funded and these follow NRO's acquisition processes.

Finding 1: DOD Space Acquisitions Management and Oversight Are Fragmented with Many Organizations Having Significant Responsibilities

Finding 1: DOD Space Acquisitions, Management, and Oversight Are Fragmented Across Approximately 60 Stakeholders[12]

DOD

Office of the Secretary of Defense
- Under Secretary of Defense for Acquisition, Technology, and Logistics
  - Assistant Secretary of Defense, Acquisition
  - Assistant Secretary of Defense, Research & Engineering
  - Deputy Assistant Secretary of Defense, Space, Strategic, & Intel Systems
  - Deputy Assistant Secretary of Defense, C3, Cyber, & Business Systems
  - Performance Assessments & Root Cause Analyses
- Under Secretary of Defense for Intelligence
- Under Secretary of Defense for Policy
  - Deputy Assistant Secretary of Defense, Space Policy
- Under Secretary of Defense (Comptroller)/Chief Financial Officer
- Director, Cost Assessment and Program Evaluation
- Director, Operational Test and Evaluation
- Chief Information Officer
  - Defense Information Systems Agency

Joint Chiefs of Staff

Secretary of the Air Force/ Principal DOD Space Advisor
- Assistant Secretary of the Air Force, Acquisition
  - Deputy Assistant Secretary of the Air Force, Directorate of Space Programs
  - Program Executive Officer, Space
- Deputy Under Secretary of the Air Force (Space)/Director, PDSA Staff
- Air Force Cost Analysis Agency
- Air Force Materiel Command
  - Air Force Research Laboratory
- Air Force Intelligence, Surveillance and Reconnaissance Agency
  - Air Force Technical Applications Center
- Air Force Space Command
  - Air Force Space and Missile Systems Center
  - 14th Air Force

Secretary of the Army
- Army Space and Missile Defense Command
  - Program Executive Office, Missiles and Space
  - Army Research Laboratory

DOD (continued)

Secretary of the Navy
- Assistant Secretary of the Navy for Research, Development and Acquisition
  - Office of the Chief of Naval Operations
  - Naval Research Laboratory
  - Program Executive Office, Space Systems
  - Office of Naval Research

U.S. Marine Corps, Plans, Policies and Operations

U.S. Strategic Command
- Joint Functional Component Command for Space

Defense Advanced Research Projects Agency

Defense Special Missile and Astronautics Center

Missile Defense Agency

Executive Office of the President

Office of Management and Budget

Office of Science and Technology Policy

National Security Council

Intelligence Community

Office of the Director of National Intelligence

Central Intelligence Agency

National Air and Space Intelligence Center

Defense Intelligence Agency

National Geospatial-Intelligence Agency

National Reconnaissance Office

National Security Agency

Civilian Community

Department of Commerce: National Oceanic and Atmospheric Administration

Department of Energy: Lawrence Livermore, Los Alamos, and Sandia National Laboratories

Department of State

Department of Transportation: Federal Aviation Administration

National Aeronautics and Space Administration

[12]Stakeholders are organizations that have a role and responsibility in defense space acquisition management or oversight, or are customers or users of defense space programs.

Finding 1: Eight Organizations Have Space Acquisition Management Responsibilities

Air Force is the lead service for the vast majority of military space acquisitions, with two organizations having management responsibilities

- As mentioned earlier, the Air Force executes approximately 90 percent of military space funding.
- Assistant Secretary of the Air Force (Acquisition), SAF/AQ, provides guidance and oversight on matters pertaining to the formulation, review, approval, and execution of acquisition plans, policies, programs, and budgets.
  - Serves as the Service Acquisition Executive for Air Force space and non-space acquisitions. Reviews Major Defense Acquisition Programs (MDAP) at all acquisition milestones, including prior to review and final decisions when the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) is the milestone decision authority.[13]
- Space and Missile Systems Center (SMC) is the Air Force acquisition center that develops, acquires, fields, and sustains military space systems.
  - The Air Force Program Executive Officer (PEO) for Space is responsible for all acquisition programs at SMC and is typically delegated milestone decision authority for applicable non-MDAPs.
  - Major SMC Missions include: military satellite communications; space superiority systems; positioning, navigation, and timing; launch; remote sensing.
  - SMC returns the completed acquisition to AFSPC and U.S. Strategic Command (STRATCOM) for their use.

[13]A Major Defense Acquisition Program is a program that is not a highly sensitive classified program and that is designated by the milestone decision authority or is estimated to require, for all planned increments, eventual total expenditure for research, development, test and evaluation of more than $480 million, or procurement of more than $2.79 billion (fiscal year 2014 constant dollars).

Finding 1: Eight Organizations Have Space Acquisition Management Responsibilities *(continued)*

Five Army and Navy organizations also have military space acquisition management responsibilities

Department of the Army

- Army's Space and Missile Defense Command (SMDC)/Army Forces Strategic Command (ARSTRAT) conducts space and missile defense operations and provides planning, integration, control and coordination of Army forces and capabilities in support of U.S. Strategic Command missions.
- PEO for Missiles and Space provides overall guidance for the development and acquisition of Army space systems.

Department of the Navy

- Assistant Secretary of the Navy for Research, Development, and Acquisition (ASN RD&A) establishes policies and procedures and manages the Navy's research, development, and acquisition activities. Serves as the Navy Acquisition Executive and carries out all Navy space acquisition functions including any joint space acquisition functions in cooperation with the PDSA and advises the PDSA on Navy space architectures.
- Navy PEO Space Systems acquires, develops, integrates, tests, launches, and provides operational support for some DOD space systems, and coordinates Navy space research, development, and acquisition activities for transition to programs of record.
- Office of Naval Research directs science and technology (S&T) and research initiatives to meet the warfighters' requirements.

Finding 1: Eight Organizations Have Space Acquisition Management Responsibilities *(continued)*

Finally, the NRO develops, fields, and operates space programs for DOD and the IC

- NRO is responsible for research and development, acquisition, launch, deployment, and operation of overhead reconnaissance systems and data-processing facilities to collect intelligence to support national and DOD missions.
- The NRO conducts its own acquisitions for space-based capabilities for the IC and also participates in joint acquisitions with the Air Force/SMC.
- The NRO is a defense agency under the authority and direction of Under Secretary of Defense for Intelligence (USD(I)) and is also part of the IC, subject to DNI oversight. The Director of the NRO (DNRO) reports to the USD(I) and DNI.
- NRO receives intelligence requirements that are NIP-funded from the Intelligence Community Capability Requirements (ICCR) process and intelligence requirements that are MIP-funded from DOD's Joint Capabilities Integration and Development System (JCIDS) process which then informs the capability documents and needs statements.

Finding 1: Eleven Organizations Have Space Oversight Responsibilities

Principal DOD Space Advisor (PDSA)

- The PDSA was formerly the Executive Agent (EA) for Space, which was responsible for coordinating with various DOD stakeholders and providing consensus recommendations on DOD space programs. In an October, 2015 memorandum the Deputy Secretary of Defense noted that space is becoming an increasingly contested domain with potential adversaries that may pose threats to deployed military forces. To address this and unify the diffuse and competing voices in defense space programs, the Deputy Secretary of Defense re-designated the EA for Space as the PDSA citing the EA for Space's difficulty in achieving DOD consensus because of the complexity of space issues and the broad range of stakeholders' perspectives, and the need to strengthen its leadership and authorities.
- The Secretary of the Air Force performs the PDSA duties, supported by the PDSA Staff office, whose Director is also the Deputy Under Secretary of the Air Force for Space. DOD is currently defining PDSA roles and responsibilities in a directive due in the summer of 2016.
- According to the Deputy Secretary of Defense's memo, the PDSA will oversee the entire DOD space portfolio including all space policies, strategies, plans, and architecture assessment across DOD space; serve as an independent advisor on all space matters to top DOD officials; review all service budgets for conformity with national security space policy; chair the Defense Space Council (DSC), a high-level forum for resolving defense space issues; and conduct an annual Space Strategic Posture Review (SPR). The SPR assesses the strengths and weaknesses of the DOD's space portfolio and delivers prioritized programmatic choices for space capabilities to the Deputy Secretary's Management Action Group (DMAG) and Secretary of Defense.
- According to PDSA officials, the PDSA began submitting an annual Space Budget Report to Congress in 2016, and will oversee implementation of the newly established Major Force Program for Space (MFP-12) in 2017.[14] The annual Space Budget Report to Congress will be based on the virtual MFP until the MFP-12 is finalized.

[14]A Major Force Program is an aggregate of lines of funding in the annual Presidential Budget Request categorized by function or objective. Congress directed the establishment of an MFP for national security space programs in the National Defense Authorization Act for Fiscal Year 2016, Pub. L. No. 114-92, § 1601 (2015). DOD is beginning implementing MFP-12 in 2016 for the fiscal year 2018 budget submission.

Finding 1: Eleven Organizations Have Space Oversight Responsibilities *(continued)*

Defense Space Council (DSC)

- DSC serves as the principal advisory forum on all Defense space matters, and is chaired by the PDSA. The purpose of the DSC is to inform, develop, coordinate, recommend, and resolve all defense space issues and provide unified strategic guidance for defense space systems and programs.[15]
- While DSC meetings can result in consensus decisions by members, it is an advisory body and has no enforcement authority.
- The PDSA can also provide views to top DOD officials in cases where the DSC cannot arrive at a consensus.
- Members are senior representatives of the organizations listed below at the Assistant Secretary, Deputy Under Secretary, senior Military officer, or equivalent-level:
  - USD(AT&L)
  - Under Secretary of Defense for Policy (USD(P))
  - USD(I)
  - Joint Staff
  - STRATCOM
  - Cost Assessment and Program Evaluation (CAPE)
  - DOD Chief Information Officer (CIO)
  - NRO
  - DOD Office of General Counsel
  - Under Secretary of Defense (Comptroller)/ Chief Financial Officer (USD(C)/CFO)
  - Under Secretaries of the Military Departments
  - Chiefs of Staff of the Services
- New members have been added to ensure all major DOD space stakeholders are represented, they include:
  - Missile Defense Agency
  - Defense Information Systems Agency
  - Defense Advanced Research Projects Agency

[15]DOD is developing an updated DSC charter that will further detail its duties and expanded membership.

Finding 1: Eleven Organizations Have Space Oversight Responsibilities *(continued)*

7 OSD organizations have oversight responsibilities

USD(AT&L)

- Chairs the Defense Acquisition Board (DAB) and serves as the Defense Acquisition Executive (DAE) with overall responsibility for overseeing the performance of the DOD acquisition system. The DAE also acts as the Milestone Decision Authority on all MDAPs unless delegated to another official. Serves as the OSD focal point in coordination with other OSD stakeholders who have space programs and capabilities.
  - Space, Strategic, & Intelligence Systems office: Primary advisor to the USD(AT&L) on all issues associated with the DOD end-to-end Space and Intelligence infrastructure and is the lead for DOD space and intelligence acquisition oversight.
  - C3, Cyber, & Business Systems office: Functional and acquisition oversight of all critical war fighting communications, command and control, and cyberspace capabilities in DOD. Leads the development and implementation of Department-wide communications, command and control, cyberspace architecture, and strategic approaches; and synchronizes these capabilities.
  - Performance Assessments & Root Cause Analyses office: Conducts performance assessments or root cause analyses of all MDAPs periodically or when requested by the Secretary of Defense, USD(AT&L), the Secretary of a military department, or the head of a Defense Agency.

USD(I)

- Exercises planning, policy, and strategic oversight of all defense intelligence-related space matters and intelligence-related agencies such as the NRO.

USD(P)

- Formulates national security and defense policy including space-related policy, and integrates and oversees these policies and plans to achieve national security objectives. Supports DOD and national leadership by leading change to implement DOD Strategic Guidance and National Security Space Strategy.

DOD CIO

- Specifically for DOD space, the CIO provides oversight and drafts policy, strategies, and guidance for positioning, navigation and timing (PNT) programs including PNT architecture and requirements, and also satellite communications.

CAPE

- Responsible for independent cost estimates, program evaluation, and analysis for all MDAPs, and establishes guidance for and oversees conduct of Analysis of Alternatives (AOA).[16]

Director of Operational Test and Evaluation (DOT&E)

- Provides independent assessments to the Secretary of Defense and USD(AT&L) on operational and live fire test and evaluation of DOD MDAPs; confirms operational effectiveness and suitability of defense systems for combat use.

USD(C)/CFO

- Directs the formulation and execution of DOD budgets, administers and provides analysis and recommendations on the budgeting and execution phases.

[16]An analysis of alternatives (AOA) is a key analysis in the DOD acquisition process that compares the operational effectiveness, suitability, and lifecycle costs of solutions to satisfy documented capability needs.

Finding 1: Eleven Organizations Have Space Oversight Responsibilities *(continued)*

The Assistant DNI for Acquisition, Technology, and Facilities (ADNI(AT&F)), along with USD(AT&L), has oversight over NRO acquisitions

- ADNI(AT&F) and USD(AT&L) have joint Milestone Decision Authority on wholly or majority NIP-funded acquisition programs.
  - For majority or wholly NIP-funded NRO programs, ADNI(AT&F) and the USD(AT&L) can delegate Milestone Decision Authority to the DNRO.
  - For majority or wholly MIP-funded NRO programs, USD(AT&L) is the Milestone Decision Authority and can delegate to the DNRO with Office of the Director of National Intelligence participation.
- According to officials, both the IC and DOD requirements processes feed into NRO's activities, and NRO acquisition processes are generally similar to DOD's—for example, MIP-funded and NIP-funded major acquisitions both go through acquisition boards for review.

Finding 1: Eleven Organizations Have Space Oversight Responsibilities *(continued)*

Office of Management and Budget (OMB)

- Provides Executive Branch oversight of space programs by ensuring that the President's priorities—described in the National Space Policy[17]—are reflected in what the departments and agencies are pursuing.
- For example, every fall OMB engages in space program reviews, where it analyzes major space programs and suggests changes.

[17]Executive Office of the President, *National Space Policy of the United States of America*, (June 28, 2010)

Finding 1: Six DOD Organizations Are Involved in Setting Requirements for Space Programs

- **Air Force Space Command (AFSPC)** acquires, operates, and supports space programs in its mission of organizing, training, and equipping personnel. AFSPC with STRATCOM generates requirements specifying the capabilities needed for the mission. The requirements go through DOD's JCIDS requirements development process before an acquisition program of record is created.
- **Army's Space and Missile Defense Command (SMDC)/Army Forces Strategic Command (ARSTRAT)** is the Army's proponent for all space-related functions and is responsible for developing Army space requirements.
- **Chief of Naval Operations** provides requirements for Navy space systems and space-related strategies and operations, and provides space strategies, plans, capability needs, and interoperability requirements in coordination with the ASN RD&A to the PDSA for review, coordination, and integration into the National Security Space Plan.
- **Commandant of the Marine Corps** also provides requirements for space systems. The Marine Corps is primarily an end-user of space capabilities and is involved in the space-system acquisition process through establishing requirements. The Marine Corps focuses primarily on user equipment such as satellite communications (SATCOM) terminals and PNT enabled systems.
- **STRATCOM** is the primary command supported by defense space capabilities and is one of nine unified combatant commands that assesses and establishes the warfighter capabilities and needs. STRATCOM generates the majority of space mission requirements. The capabilities are then validated and prioritized through the JCIDS or ICCR processes leading to the drafting of requirements documents.
- **JCS** is mainly involved in reviewing operational requirements—what effects the requirements will have on joint military-intelligence operations and what capabilities DOD will need—including validating the requirements through the JCIDS and/or the ICCR processes.

Finding 2: DOD Has Generally Not Made Significant Changes to Space Leadership over the Past Two Decades; Impacts of Recent Changes Remain to Be Seen

Finding 2: Several Studies Since 2001 Have Recommended Changes, but DOD Has Made Limited Progress Addressing Many of These Recommendations, and It Is Too Early To Assess Progress on Some Changes

- As discussed in the next few slides, four generally recognized studies and commissions in the last two decades have recommended 28 changes to the defense space community to improve acquisition and management outcomes.
- DOD has made progress in some areas in the below categories, such as making space a national security priority and improving coordination among defense space entities, but has made limited progress in addressing many of the 28 recommendations.

Figure 2: Summary of Progress Made Towards Study Recommendations

Recommendation Category	Space as a national security priority	Unified leadership and authority	Improved coordination between space entities	Budget issues	Planning	Acquisition process
Progress made	Significant progress	To be determined	Some progress	Some progress	Some progress	Some progress

◓ Some progress made
● Significant progress made

Source: GAO analysis of data from four studies on defense space management. | GAO-16-592R

Finding 2: Influential Studies on Leadership

- In discussions with experts in the field, we identified four studies that were generally accepted as the most comprehensive and influential:
  - *Report of the Commission to Assess US National Security Space Management and Organization*; Hon. Donald H. Rumsfeld, Chairman, 2001 (also called the Space Commission or Rumsfeld Commission).
  - *Joint Task Force on Acquisition of National Security Space Programs,* Defense Science Board and Air Force Scientific Advisory Board, 2003 (referred to here as the DSB Report).
  - *Leadership, Management, and Organization for National Security Space Report*, Institute for Defense Analyses, 2008 (also called the Allard Commission).
  - *Report on Challenges and Recommendations for United States Overhead Architecture,* House Permanent Select Committee on Intelligence, 2008 (referred to here as the HPSCI Report).

Finding 2: Influential Studies on Leadership *(continued)*

The studies' scopes were broad, looking at a wide variety of issues in space including but not limited to acquisitions. In general, these reports made 28 recommendations related to management, oversight, and acquisitions in the defense space community that we grouped into the following six categories:

- Space as a national security priority: the studies highlighted the importance of space to national security and suggested it be made a national security priority with the attention of leadership.
- Unified leadership and authority: the studies made numerous statements on the importance of high-level, unified leadership and authority over space programs, including establishing new offices and positions to improve space leadership.
- Improved coordination between defense space entities: the studies noted the importance of close working relationships between DOD and the IC and recommended methods to increase coordination.
- Budget issues: the studies made recommendations toward improving budgetary insight and accountability for space programs, and in one case, for consolidating control over the budget formulation and execution process.
- Planning: the studies made recommendations aimed at developing high-level plans, architectures, and strategies that would guide government-wide space priorities.
- Acquisition process: some of the studies made detailed recommendations on how to improve the acquisition process for space programs.

Finding 2: Status of Study Recommendations – Space as a National Security Priority

DOD, Congress, and the executive branch have made significant progress on the recommendations related to establishing space as a national security priority.

- In recent years, space has become a more visible national security issue.
  - The two most recent National Space Policies (2006 and 2010) identified free access to and use of space as a vital national security interest, reemphasized the foundational contributions of space capabilities in supporting overall U.S. interests, and established overarching national policy for the conduct of U.S. space activities.
  - Increased insight into international counterspace threats has highlighted the importance of space-based capabilities and the potential impacts of losing them.
  - According to DOD, space is now the only standing topic in DOD's annual Strategic Portfolio Review process, whereas before it was only included occasionally.[18]
  - DOD's 2016 budget submission added over $5 billion in new investments in space. Recent public comments from high level DOD officials have also shown this increased emphasis on space protection.
  - Also in 2015, DOD re-designated the EA for Space role as the Principal DOD Space Advisor, with the goal of giving that position a higher profile within the department.
  - The National Defense Authorization Act for Fiscal Year 2016 included a few provisions highlighting the importance of space, including directing DOD to establish a major force program for national security space programs and establish a Principal DOD Space Control Advisor.

[18]At the direction of Deputy Secretary of Defense, CAPE conducts annual strategic portfolio reviews for select portfolios or issue areas to inform budget decisions. The topics covered vary from year-to-year depending on what issues the Deputy Secretary of Defense identifies as important.

Finding 2: Status of Study Recommendations – Unified Leadership

DOD has not adopted many recommendations related to unified leadership and authority; it is too early to tell whether recent changes will be effective.

- The studies recommended a number of ways to improve leadership and decision-making authority in the defense space community, including establishing a high-level office with responsibility for planning and execution of national security space programs, led by an Under Secretary of Defense-level official. Another recommendation suggested combining functions of the NRO and Air Force space acquisitions into a unified organization. Changes have been made, with some but not all in response to the studies.
- In response to the 2001 Space Commission, the Secretary of the Air Force was designated as the DOD Executive Agent for Space in June 2003, and was given milestone decision authority for space programs; this role was delegated to the Under Secretary of the Air Force who was dual-hatted as EA for Space and Director of the NRO.[19]
  - However, the EA for Space role was not given control over the budget, and its roles as both milestone decision authority and as Director of the NRO were rescinded in 2005 after only a few years, thus limiting its ability to be a coordinating body for space activities.
  - Some experts have noted that this dual-hatted role may not have been successful because it was too much responsibility for a single person. Others have noted that the EA for Space was never given either the full authority needed to make the dual-hatted role successful or the time to bridge the cultural divide between the Air Force and NRO.

[19]The Director of the NRO was dual-hatted with an Air Force position (generally Secretary of the Air Force, Undersecretary of the Air Force, or Assistant Secretary of the Air Force) from its founding in 1961 through 2005. For much of this time the Director was not acknowledged because the NRO was a classified organization until 1992.

Finding 2: Status of Study Recommendations – Unified Leadership *(continued)*

- In 2004, the Undersecretary of the Air Force/Director of the NRO established the National Security Space Office (NSSO) to assist in integrating space activities. The NSSO combined the functions of the National Security Space Architect (NSSA) with the National Security Space Integration directorate (NSSI).[20] The NSSO was disestablished in 2010 and its staff reassigned to the Deputy Under Secretary of the Air Force.
- In 2010, the Defense Space Council was created to serve as the principal advisory forum for all defense space matters. While this body appears to be a useful forum for discussing space issues, it has little enforcement authority and has a mainly advisory and consensus-building role.
- The Assistant Secretary of Defense for Networks and Information Integration (ASD(NII)) served as the principal staff assistant and advisor to the Secretary of Defense on non-intelligence space matters until the position was disestablished in 2012, and its responsibilities transferred to the DOD Chief Information Officer (CIO) and USD(AT&L).

[20]The NSSA, was created in 1998 by the Secretary of Defense and combined architecture responsibilities from the IC with those of the DOD Space Architect. The NSSA was responsible for developing architectures across the range of mission areas for DOD and the IC.

Finding 2: Status of Study Recommendations – Unified Leadership *(continued)*

- More recently, in October 2015, DOD re-designated the EA for Space role as the Principal DOD Space Advisor.
- According to PDSA officials, the PDSA has additional responsibilities and authorities compared to the EA for Space as described earlier. In addition, according to PDSA officials, more responsibilities are to be detailed in a charter which is under development. Officials described some of the significant changes that are planned for inclusion in the new charter:
  - Authority to submit budget issue papers on the president's budget, as OSD staff offices do, which are based on analysis done under the SPR process.
  - Review budget submissions of every entity with responsibilities for space capability development and assess compliance with National Security Council (NSC)-approved plans and departmental policy.
  - Assess enterprise architectures.
  - The PDSA can now nominate issues, give independent assessments, and make recommendations to top DOD officials, including the Deputy Secretary's Management Action Group (DMAG), JROC and DAB, especially when there is no DSC consensus on space issues and programs.[21] According to PDSA officials, this is a new authority compared to the EA for Space which did not have a formal process to share independent assessments and could only present DSC decisions where the members reached consensus. Now, there is a process for the PDSA to share updates and assessments quarterly to the DMAG.

[21]The DMAG is a DOD forum comprised of top DOD officials that provides advice and assistance to the Deputy Secretary of Defense. It is co-chaired by the Deputy Secretary of Defense and Vice Chairman of the Joint Chiefs of Staff, with Secretaries of the Military Departments, Chiefs of the Military Services, and DOD Principal Staff Assistants holding standing invitations.

Finding 2: Status of Study Recommendations – Unified Leadership *(continued)*

- PDSA officials believe the move to the PDSA will consolidate leadership in space and address the issue of fragmented leadership responsibilities; however, it remains to be seen whether the changes will be effective.
  - For example, PDSA officials and experts stated that the PDSA's new role includes greater authority because it now has the ability to voice opinions to the DMAG. However, we have reported that the DMAG primarily addresses issues on an ad hoc basis and that most investment decisions get made on a piecemeal basis within the acquisition, requirements, and budget processes.
  - A PDSA official stated that a lack control over budget execution will be an advantage rather than a hindrance, allowing their office to serve as a "neutral referee."
  - In addition, some stakeholders stated that the current status quo of a more diffuse authority structure allows them to provide input into many aspects of space acquisitions management and oversight.
  - Many DOD officials and experts expressed skepticism, stating that the PDSA change is merely a cosmetic one.
  - However, PDSA officials noted that the PDSA change has only been in place for seven months and has not yet completed a full presidential budget cycle. They stated that it will take time to realize the benefits of this change.

Finding 2: Status of Study Recommendations – Coordination between Defense Space Entities

The Air Force and NRO have made some progress on improving coordination. However, it remains to be seen if the PDSA can serve as an overall DOD-wide focal point for interagency coordination with authority to make decisions, as recommended by the studies.

- Air Force and NRO officials we spoke with noted numerous opportunities in requirements and program development for interaction and joint decision-making, including on joint requirements, and through working groups and program meetings.
  - For example, NRO participates in the DSC, quarterly meetings with the National Security Agency and National Geospatial-Intelligence Agency, and technical working groups. The DNRO meets with National Aeronautics and Space Administration and Air Force senior leadership at various summits.
  - DNRO coordinates with various DOD National Security Space (NSS) stakeholders on policy and strategy that affects overhead reconnaissance or space activities; ensures the Secretary of Defense and DNI are informed on all important NRO activities; advises the PDSA and the DSC on reconnaissance matters in order to generate greater synchronization for NSS programs and planning; and ensures NRO activities are integrated within the DOD.
- In October 2015 the DOD and the IC opened the new Joint Interagency Combined Space Operations Center (JICSpOC) to develop joint approaches to operating in a contested space environment.
- According to the Air Force, Air Force Space Command, with input from the NRO, has developed a Space Enterprise Vision, which is aimed at coordinating planning for space systems across stakeholder agencies.
- DOD has undertaken efforts to support and sustain its space situational awareness (SSA) capabilities, and coordinates with the IC and various civil agencies on sharing data among various SSA sensors.
- In addition, all space stakeholders have an opportunity to discuss space–related issues at meetings of the Defense Space Council chaired by the PDSA.

Finding 2: Status of Study Recommendations – Budget

Some progress has been made in changing the way DOD accounts for space program funding; however, there remains a lack of a unified organization or position with authority for defining and formulating the defense space budget, as recommended by one of the studies.

- The Allard Commission recommended a strong executive to set resource priorities and formulate and execute budgets for national security space.
- A virtual Major Force Program (MFP) to track space funding was established in response to the 2001 Space Commission.[22]
  - The virtual MFP has benefits in consolidating space funding in a more visible way. However, determining what is in the virtual MFP is flexible, and it may not include all space-related programs such as terminals.
  - The 2016 NDAA directed DOD to make this virtual MFP into a firm MFP, which DOD officials expect will begin in the next few years. According to CAPE, this change will likely not make a significant difference in the way the MFP is managed, but others have noted that it demonstrates DOD's commitment to space programs.
- While not a result of a study recommendation, in the fiscal year 2016 President's Budget request, a new appropriation category was introduced: Space Procurement Air Force. This new category took most space programs out of the Missile Procurement category, and may help track space programs more clearly.

[22]A "virtual" MFP, such as the one for space programs, is an aggregation of program funding lines into a group as a way to track funding for space programs.

Finding 2: Status of Study Recommendations – Planning

Some progress has been made toward recommendations related to developing high-level plans to guide priorities in the defense space community; however, these plans may not be enforceable.

- In 2011, DOD and ODNI published a National Security Space Strategy, as recommended by the Allard Commission, which gave guidance on a path forward for space capabilities, but it does not go as far as the study recommended in establishing lines of authority and delineating priorities.
- The Commander of Air Force Space Command, in coordination with the Director of the NRO, has developed a Space Enterprise Vision that is aimed at coordinating planning for space systems across stakeholder agencies. The document, however, is classified at high levels, potentially limiting its visibility. In addition, the enforceability of this document at levels above AFSPC and NRO is still to be determined.
- The PDSA's office plans to conduct architecture planning. However, the Space Commission recommended that these large planning decisions be made by an office or person at the OSD level. In addition, PDSA officials acknowledged they may not have sufficient resources to carry out this task.
  - Some of the PDSA's new duties may contribute to improved planning, such as leading the annual Space SPR, as well as its plans to review the budget submissions of every entity with responsibilities for space capability development and assess compliance with NSC-approved plans and departmental policy.

Finding 2: Status of Study Recommendations – Acquisition Process

Changes have been made to the acquisition process for space programs, but problems persist.

- One of the studies recommended certain changes to the acquisition process and workforce including conducting more effective independent cost estimates, developing a more robust systems engineering process, and clearly defining program manager responsibilities.
- There have been several general acquisition reform efforts since the reports, including the Weapon Systems Acquisition Reform Act of 2009, changes made to DOD acquisition guidance, and the Better Buying Power initiatives by USD(AT&L), which seek to strengthen acquisitions through the use of best practices.[23]
- However, our work has shown that many acquisition problems still exist despite reform efforts.
- In addition, DOD has made some changes to acquisition processes in recent years that have the potential to impact space programs. Among others,
  - In November 2013 the DOD Instruction 5000.02 on acquisition was changed to formally allow satellite programs to combine two major program milestones, B and C, which mark the beginning of the development and production phases, respectively, to allow for streamlining of the process. While GAO has not assessed the effects of this change, we previously reported that committing a program to production without a substantive development phase may increase cost and schedule risks.
  - The National Defense Authorization Act for fiscal year 2016 directed DOD to shift milestone decision authority to the service level for some programs. It is too early to tell the extent to which this change will affect space programs.

[23]Pub. L. No. 111-23.

Finding 3: Fragmented Leadership Has Contributed to Poor Coordination and Lengthy Decision Making; Experts Cited Some Options for Further Consideration

Finding 3: GAO, DOD, and Experts Have Noted Several Persistent Challenges

DOD's oversight review bureaucracy contributes to acquisitions inefficiencies generally.

- In 2005, we reported that DOD program managers believe they are not sufficiently empowered to execute their programs and that, because much remains outside their span of control, they cannot be held accountable.[24] We heard similar sentiments from DOD officials and experts during our interviews.
- 2011 and 2012 studies by the Defense Science Board and Defense Business Board (DBB), respectively, also highlighted the challenge of redundant reviews, with one study saying DOD has a "checkers checking checkers" system, which contributes to inefficiencies.
  - The DBB report noted a fundamental problem that decisions are made in three separate "stovepipes": requirements, acquisition, and budgets. Each of these stovepipes is a multi-layered, heavily bureaucratic series of sequential and oftentimes uncoordinated processes. The three stovepipes do not operate on the same timelines, do not utilize common documentation, and often create situations resulting in conflicting decisions.
  - We have also reported that DOD's processes operate in a highly fragmented manner, with little portfolio management or planning that would help DOD more effectively leverage its weapon system investments.[25]
- In 2015, GAO examined DOD's weapon system acquisition processes and found that the department's review process—conducted in serial at each level—was inefficient for unclassified programs.[26]
  - We found that DOD reviews for some programs included up to 56 organizations at 8 levels above the program office. Most program managers felt that these reviews were generally not of high value to the end result.
- DOD has taken some steps to streamline reviews, such as pilot testing a more streamlined process and using electronic tools to track progress of reviews, but those efforts have been limited in scope. USD(AT&L) issued an updated Better Buying Power initiative in 2015 that, among other things, aimed to streamline reviews, but more time is needed to determine results.

[24]GAO, *Best Practices: Better Support of Weapon System Program Managers Needed to Improve Outcomes*, GAO-06-110 (Washington, D.C.: Nov. 30, 2005). [25]GAO-15-466.
[26]GAO, *Acquisition Reform: DOD Should Streamline Its Decision-Making Process for Weapon Systems to Reduce Inefficiencies*, GAO-15-192 (Washington, D.C.: Feb. 24, 2015).

Finding 3: Space Programs Experience Same Issue of Too Much Bureaucracy

We heard corroborating sentiments from DOD and expert space officials.

- Takes a minimum of 3 years to develop an acquisition strategy, issue a request for proposal, conduct source selection, and award a contract. By then technologies and requirements can be obsolete. For example,
  - One contractor told us that it took over a year for the Air Force to develop a request for proposal for a low-dollar, $2 million study.
- OUSD(AT&L) officials emphasized that the 5000.02 acquisition policy is very tailorable and that programs can take advantage of its flexibility to follow the steps that make sense for them. However, Air Force officials said that this does not play out in practice and that oversight entities are reluctant to waive or change steps out of fear that they will be blamed later. For example, officials told us that:
  - USD(AT&L) sometimes asks for quick follow-ups to expedite a decision; however, Air Force space officials told us that the AT&L organization interprets every meeting with the Under Secretary as a formal defense acquisition board meeting, requiring three prior readiness meetings each time;
  - OSD staff are rigid and have a hard time letting disagreements with the program go through. Several program managers told us that it takes them longer to tailor or waive something than to just incorporate it.
- A common complaint was that OSD staff frequently exceeded their responsibilities, for example, sometimes rewriting acquisition strategies, or acting as shadow program managers and second-guessing program contracting decisions based on their individual experience, instead of verifying compliance against DOD policy.

Objective 3: Delays Affect Space Acquisition Programs

Lengthy decision making magnifies challenges in space.

- Space programs are inherently joint and have a large set of stakeholders, further encumbering the acquisitions and requirements processes. One senior official referred to a "cacophony of voices" and resulting requirements creep that affects most military space programs. As a result, it is very difficult to gain consensus. For example,
  - The defense weather satellite AOA process took over 2 years to be completed—including about a year for DOD reviews after the study team completed its analysis. The head of Air Force Space Command remarked that this was an overly long process for a satellite that is fairly simple compared to other satellite programs. CAPE officials stated that the AOA took the appropriate length of time and that DOD works to balance the need for comprehensive analysis with timelines for decisions. They also stated that decision briefings can precede the final report—which takes time to produce—by several months.
- Delays can contribute to undesirable effects in space acquisitions. For example,
  - Space programs are typically high dollar, low volume acquisitions, and these are frequently obsolete by the time systems are deployed because threats and technologies change rapidly; this in turn reinforces a tendency to overload program requirements.
  - Two experts referred to a vicious cycle of high launch costs, too many requirements, ever increasing mission assurance expectations, cumbersome contracting and accounting requirements, implicitly steering acquisitions to a few, large contractors who have the resources to keep up with everything.
- PDSA officials noted that, given the increasingly contested space environment, DOD must move space acquisitions beyond just cost, schedule, and performance considerations and work to enhance space mission assurance, including defensive operations and resilience. However, as we have noted for many years, matching needs and resources prior to product development is key to delivering capability when needed.[27]

[27]GAO, *Best Practices: Better Matching of Needs and Resources Will Lead to Better Weapon System Outcomes*, GAO-01-288 (Washington, D.C.: Mar. 8, 2001); *Defense Acquisitions: Fundamental Changes are Needed to Improve Weapon Program Outcomes*, GAO-08-1159T (Washington, D.C.: Sep. 25, 2008); *GPS: Actions Needed to Address Ground System Development Problems and User Equipment Production Readiness*, GAO-15-657 (Washington, D.C.: Sept. 9, 2015).

Finding 3: NRO's Processes Appear More Streamlined

By contrast, the NRO's processes appear more streamlined than DOD's, but the agency is not subject to the same constraints.

- According to NRO officials, the NRO's Director has significant authority over acquisitions, budget, and requirements decisions, and NRO program managers are normally just two review levels removed from the Director.
- However, some officials noted that the NRO's mission is more focused than that of military space, and that this may be a key reason the NRO is able to have more streamlined processes.
- In addition, NRO officials stated that their agency's acquisitions are not subject to certain statutory requirements that apply to military systems, such as demonstrating compliance with the Clinger-Cohen Act of 1996—a law aimed at improving the government's performance in IT management, which require time and documentation to address.[28]
- Some officials cautioned that it is not clear whether NRO acquisitions achieve better outcomes than those of DOD.

[28]Pub. L. No. 104-106, Div. E. (1996); as amended and codified in 40 U.S.C §§ 11101-11703. The law, initially titled the Information Technology Management Reform Act, was subsequently renamed the Clinger-Cohen Act in Pub. L. No. 104-208, § 808 (1996).

Finding 3: Space Acquisition Leadership Has Been Fragmented

Fragmented space acquisition leadership means that "no one is in charge."

- As discussed earlier, military space oversight responsibilities are dispersed among 7 OSD organizations. As one organization's officials put it, for NIP-funded space programs, the DNRO reports to the DNI; however, for MIP-funded space programs, the DNRO has to coordinate with several OSD entities in addition to the Air Force and other services or agencies as appropriate. Many experts remarked that "no one is in charge" for space acquisitions.
  - We reported in 2015 that DOD's procurement of commercial SATCOM is fragmented and inefficient, with some components purchasing their own SATCOM and paying higher prices than they would have through the department primary procurement vehicle.[29]
- Many interviewees remarked that USD(AT&L) is the only real decision-making authority for space-related topics; however, some senior officials reported that this can have unexpected effects, such as the Under Secretary having to make broader space architecture decisions, which are larger issues that fall outside his responsibility. Officials noted that such decisions fall to the Under Secretary by default because there is no space-specific authority.
- Officials and experts generally stated that, because space lacks strong, central leadership, no single organization has been responsible for long-term planning and architectures for space, and to the extent it is being done it is focused on mission areas such as SATCOM and PNT and not at an enterprise level.

[29]GAO-15-459.

Finding 3: Too Early to Gauge Effectiveness of Recent Changes to Space Leadership

- Air Force Space Command is pushing for a more holistic view and an enterprise architecture; however, officials told us that this is because the current commander of AFSPC is filling a void, not that AFSPC has or should have this responsibility. Officials stated a concern that these efforts may lapse after a change in leadership.
- There are some good examples of cooperation:
  - As previously discussed, DOD and NRO are working to improve national security space information sharing through the JICSpOC initiative.
  - DOD has taken steps to enhance military-IC information sharing and cooperation for better space situational awareness (SSA).
- However, many interviewees expressed concern that collaboration and cooperation initiatives may lapse after any changes of personnel in leadership positions. Our prior work has shown that without some kind of coordinating body or positions in place, it is possible that a change in leadership could affect coordination.[30]
- PDSA officials stated that they believe their organization, although new, will effectively consolidate space leadership responsibilities. However, it is too early to determine whether the PDSA will have sufficient authority or staff for this role. Many DOD officials were unconvinced that the move is significant beyond a change in name from the EA for Space. Some officials thought the PDSA authority may be better placed in OSD so that the position is not perceived as service-centric.
- Notably, many DOD officials and experts expressed a belief that PDSA can be effective in the new role, particularly citing the current Secretary of the Air Force's commitment to space, and suggested that sufficient time be given to allow the change to work. In addition, PDSA officials stated that the increased threat environment described earlier along with a need for greater mission assurance is already having a unifying effect on management and oversight, and noted that they will develop metrics that will help gauge their effectiveness compared to the EA for Space.

[30]GAO-12-1022; GAO, *Interagency Collaboration: Key Issues for Congressional Oversight of National Security Strategies, Organizations, Workforce, and Information Sharing*, GAO-09-904SP (Washington, D.C.: Sept. 25, 2009)

Finding 3: Key Principles for Change Cited by Experts

- Based on our interviews with DOD officials and experts, we identified some suggested themes for reform, some of which apply to DOD acquisitions broadly:
  - Streamline reviews.
  - Delegate more decision-making authority to lower levels.
  - Increase unity of NSS decisions between DOD and the NRO.
  - Achieve lasting change that cannot be quickly undone and to allow time for the changes to work.
  - Provide sufficient acquisition, execution, and budget authority.
- Officials and experts voiced some concerns:
  - Any big changes would greatly disrupt DOD's organization.
  - Some recommendations, such as more closely integrating NRO into DOD, may disrupt NRO's relative efficiency.
- Changes beyond organizational structure may also be needed. Experts cited weaknesses such as difficulty in training and retention of the acquisition workforce and an over-reliance on support contractors that they believe also need to be addressed.

Finding 3: Four Selected Proposals for Change

- We examined several potential approaches to reforming DOD space acquisitions that were suggested by DOD and expert officials and selected four for analysis. We provided our analysis to experts for their review and comment and most experts generally agreed with it:[31]
  - **No Further Changes:** allow time for the recent PDSA change to work.
  - **Defense Space Agency:** combine military space functions into one agency but leave NRO unchanged.
  - **Space Acquisition Agency:** combine SMC and NRO.
  - **Space Force:** New military department for the space domain.
- Except for the first option, the other three would likely involve significant short-term disruption to DOD's space organizational structure, roles, and responsibilities. However, given the long-standing fragmentation in space leadership and consequent challenges faced by DOD in synchronizing its extensive space enterprise, proposals such as these that may entail disruptive changes may nevertheless deserve a closer look if the PDSA does not prove effective.

[31]Some experts favored a fifth option: a return to having the Under Secretary of the Air Force dual-hatted as the Director of the NRO with milestone decision authority for space programs.

Finding 3: Four Selected Proposals for Change *(continued)*

Proposed change and selected features	Benefits	Drawbacks
No Further Changes • Allow time for the PDSA change to be implemented • No further organizational changes	• Minimize organizational cost associated with disrupting existing reporting structures, authorities, and budgets • Allow DOD time to implement changes to streamline review processes and delegate authorities	• Many are skeptical that PDSA change will be effective and believe the change is more or less a semantic one • If PDSA proves no more effective than EA for Space, fragmented leadership and poor unity of space effort will continue
Defense Space Agency • Institute a USD(Space) for consolidated oversight of military space • Combine space acquisition and operations functions from the military agencies into one organization • NRO would remain a separate organization	• Provide a single leadership organization for military space activities • Greater unity of military space acquisitions and operations • Avoid disrupting NRO's mission and purpose • Would not require changes to IC organization • Focused OSD oversight of military space policies and execution	• Would not consolidate all NSS activities • Would disrupt DOD's space organizational structure, roles, and responsibilities in the short-term • Would require legislation

Finding 3: Four Selected Proposals for Change *(continued)*

Proposed change and selected features	Benefits	Drawbacks
Space Acquisition Agency • Institute a USD(Space & Intelligence) for consolidated oversight of national security space • Combine SMC and NRO; SAA would report to USD(S&I)	• Consolidate acquisition functions • Provide for greater synergistic utilization of limited pool of space professionals • Would allow more coherent approach to managing common industrial base partners	• Would require changes to IC chains of command • New organization would require time and resources to stand up • Would disrupt DOD's space organizational structure, roles, and responsibilities in the short-term • Would require legislation
Space Force • A new military department under a civilian secretary • Absorb all DOD and NRO space acquisitions and operations functions • No change to OSD offices, or, institute USD(S&I)	• Consolidate NSS activities • Would be very difficult to undo • Space would be accorded greatest visibility and attention	• Would require increased budget to stand up a separate military department • Would not necessarily address length of DOD review processes • May require clarification of Congressional oversight, currently dispersed among several Committees • Would disrupt DOD's space organizational structure, roles, and responsibilities in the short-term • Would require legislation

List of Organizations We Interviewed

List of Organizations We Interviewed

We obtained information from officials at:

- Office of the Secretary of Defense:
  - Cost Assessment and Program Evaluation, Washington, D.C.
  - Chief Information Officer, Alexandria, VA
- Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, Washington, D.C.
  - Deputy Assistant Secretary of Defense, Space, Strategic, & Intelligence Systems, Washington, D.C.
  - Deputy Assistant Secretary of Defense, C3, Cyber, & Business Systems, Washington, D.C.
  - Performance Assessment and Root Cause Analysis, Washington, D.C.
- Office of the Under Secretary of Defense for Policy, Washington, D.C.
- Office of the Under Secretary of Defense for Intelligence, Washington, D.C.
- Joint Chiefs of Staff, Washington, D.C.
- Army Space and Missile Defense Command, Huntsville, AL
- Space and Naval Warfare Systems Command, San Diego, CA
- U.S. Strategic Command, Omaha, NE
- Intelligence Community
  - National Reconnaissance Office, Chantilly, VA
- Executive Office of the President
  - Office of Management and Budget, Washington, D.C.

List of Organizations We Interviewed *(continued)*

- Air Force
  - Air Force Space Command, Colorado Springs, CO
    - Commander of Air Force Space Command
    - Directorate of Plans and Requirements
  - Space and Missile Systems Center, Los Angeles, CA
    - Commander of Space and Missile Systems Center
    - Launch Systems Enterprise Directorate
    - Remote Sensing Systems Directorate
    - Global Positioning Systems Directorate
  - Principal DOD Space Advisor, Washington, D.C.
  - Assistant Secretary of the Air Force (Acquisition), Washington, D.C.