



INSTITUTE FOR DEFENSE ANALYSES

**Independent Study of the Organizational  
Location and Acquisition Processes of the  
Missile Defense Agency (MDA)**

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## Executive Summary

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The Department of Defense (DoD) selected the Institute for Defense Analyses (IDA) to conduct the independent study mandated in the National Defense Authorization Act (NDAA) for Fiscal Year 2020, Sec.1688(a). The study consisted of two main parts: (1) an assessment of the location of the Missile Defense Agency (MDA) in the DoD hierarchy, and (2) an assessment of transitioning MDA to the standard DoD 5000 acquisition process. IDA's overarching approach to conducting the study included interviewing current and former senior government officials, examining existing documents and reports, and analyzing and comparing the information to identify common themes.

MDA's authorities and responsibilities have evolved since it was established in 2002. Although it was not envisioned when it was established, MDA has for years programmed for production and sustaining engineering. MDA's budget shares also show that it is primarily focused on developing, procuring, upgrading, and providing in-service engineering for the major components of the Ballistic Missile Defense (BMD) system-of-systems. Although MDA has and continues to conduct advanced technology research and development, this activity does not constitute a substantial share of its overall program (accounting for only 1 to 3 percent of its budget over the years). Furthermore, over time MDA has been assigned a degree of responsibility for hypersonic missile defense and was designated as Technical Authority for theater Integrated Air and Missile Defense.

To assess the location of MDA in the DoD hierarchy, IDA examined the pros and cons of different potential parent organizations in terms of the alignment among MDA's responsibilities and the characteristics an oversight organization should have for MDA to effectively discharge its responsibilities. Regarding organizational options to consider, the NDAA specified USD(R&E), MDA's current location, USD(A&S), and other DoD officials that might be suitable. We found that USD(A&S) would be most closely aligned with MDA's mission and responsibilities, which are largely focused on developing, procuring, and performing sustaining engineering for an integrated systems-of-systems. USD(A&S) also has some of the staff that formerly oversaw MDA acquisition under USD(AT&L) and has milestone approval authority for all major missile defense programs. Thus, USD(A&S) would be a good location for MDA. Note that, as is the case with all DoD acquisition programs, overseeing systems engineering and developmental testing would lie with OUSD(R&E).

Regarding other potential parent organizations, IDA considered the Services and chose Space Force for detailed analysis. Space Force has missions and associated capabilities, such as space sensors, that are important to the overarching missile defense mission. We found that Space Force

has the full range of authorities and capabilities for space-based systems, but lacks authorities and expertise for surface-based interceptors and activities involving other Services. In fact, each Service lacks capabilities across the full range of missile defense responsibilities.

Some interviewees suggested that the Deputy Secretary of Defense (DEPSECDEF) should be considered, because this location would raise the visibility of MDA to a high level in DoD. However, we found that DEPSECDEF already has high visibility into MDA's activities and, due to a plethora of existing responsibilities, would likely delegate oversight to an Under Secretary. IDA also considered the Combatant Commands (COCOMs) and chose USSTRATCOM to examine in detail. USSTRATCOM has the strategic deterrence mission and no stake in any particular region, and is part of the missile defense requirements development and prioritization efforts. However, USSTRATCOM lacks acquisition authorities and would need to be provided these authorities in law.<sup>1</sup> It also lacks acquisition expertise and would need to develop expertise overseeing complex, major programs and hire the requisite staff.

IDA also assessed transitioning MDA to the standard DoD 5000 acquisition process versus leaving MDA with its current process, specified under the recent DEPSECDEF directive-type memorandum (DTM). Under the DTM, MDA no longer has the exclusive control of documentation, milestones, and technical requirements that it had under its original charter. Nevertheless, although MDA's process and DoD 5000 have similar phases and milestones, MDA would have more reporting and external review and approval requirements under DoD 5000 than it does under the DTM. That said, DoD has recently established the Adaptive Acquisition Framework (AAF) to make DoD 5000 more tailorable, and so that it could potentially be made to look more like the DTM process. Thus, given the establishment of the DTM and AAF, MDA's process is now closer to DoD 5000. We note, however, that both the DTM and AAF are relatively new<sup>2</sup> and there is little practical experience on how they will affect long-term acquisition outcomes.

The benefits of MDA transitioning to DoD 5000 include that the latter (1) is an established process that is well understood by the Services, (2) has longstanding management principles and extensive reviews intended to improve program success (in terms of performance, effectiveness, and cost), and (3) can now be tailored to individual programs. The risks include (1) many interviewees said that the full DoD 5000 process takes too much time, (2) additional processes and documentation may be required which MDA does not exclusively control, and (3) any tailoring requires expertise to structure an appropriate process and balance risk. In the end, our assessment did not reveal a definitive answer to this congressional question. Indeed, many of those we interviewed asked—given the DTM process now in place—what problem would such a transition be trying to solve? On the other hand, others asked—given that the DTM process is now closer to

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<sup>1</sup> Some COCOMs have limited acquisition authorities. For example, CDR, USSOCOM, has acquisition authorities under Title 10 U.S.C. § 167.

<sup>2</sup> Both were formally established after the NDAA mandating this study became law.

DoD 5000, which itself is now more flexible—why not transition? Once DoD has significantly more experience with the DTM and AAF processes, it potentially could revisit the question of transitioning MDA to DoD 5000.

Under the DTM, MDA is now required to obtain early formal approval of requirements from the Services and COCOMs, but it still does not fall under the Joint Capabilities Integration and Development System (JCIDS) process. The benefits of MDA transitioning to JCIDS include that JCIDS (1) adjudicates multi-Service and COCOM equities, (2) requires extensive reviews which may identify issues sooner, and (3) establishes formal relationships with Service operators early. The risks include that JCIDS (1) takes too much time, according to most of the interviewees, (2) can lead to requirements “creep,” (3) can lock in requirements too early, before their viabilities are established, (4) could disrupt MDA’s close and established relationships with the warfighter (via the Warfighter Involvement Process), and (5) would mean that MDA would not have exclusive control of requirements. Thus, we found that MDA should not be under JCIDS at this time, an opinion shared by most of the interviewees. Furthermore, although JCIDS is the primary system used by the Joint Requirements Oversight Council (JROC), it is not the only way for the JROC to review requirements. Thus, MDA could still seek JROC endorsement through other (and quicker) pathways, although those alternatives generally do not involve the multiple in-depth reviews of technical and operational issues required by the current JCIDS. We note that the requirements for MDA’s Next Generation Interceptor program recently went through the JROC.

Finally, many of the interviewees argued that the nature of the missile threats to the United States requires speed in the acquisition process to keep pace, and that special authorities could potentially help enable that speed. It is crucial to note, however, that speed is not the only important criterion for programs. More generally, a program should aim to build a system within budget and on schedule that meets the threat defeat requirements. Unfortunately, an acquisition process alone generally cannot ensure the production of effective systems. Program failures can and do occur with any process, including DoD 5000. The success of a program—in terms of effectiveness, cost and speed—depends critically on proper implementation. Furthermore, MDA is not the only organization that desires speed. Most DoD programs want to move quickly through acquisition, especially given the current level of competition with adversaries. Toward this end, DoD is making the DoD 5000 acquisition process more flexible via the AAF. In addition, Gen. John E. Hyten, Vice Chairman of the Joint Chiefs of Staff and head of the JROC, is examining ways to improve the speed of the JCIDS process. If DoD can establish streamlined processes that provide effective oversight for acquiring systems, perhaps MDA would not need special authorities.

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## Table of Contents

---

1.	Introduction .....	1-1
	A. Historical Background.....	1-1
	B. Missile Defense Agency.....	1-4
	C. Congressionally Mandated Study .....	1-9
2.	Organizational Assessment .....	2-1
	A. Methodology.....	2-1
	B. MDA’s Mission, Responsibilities, and Program .....	2-2
	1. MDA’s responsibilities for Ballistic Missile Defense.....	2-4
	2. MDA’s Program and Budget .....	2-6
	3. Changes in MDA’s external relationships introduced by the Directive-Type Memorandum.....	2-8
	C. Potential Parent Organizations.....	2-9
	1. Key Attributes of the Potential Parent Organizations .....	2-10
	2. Observations on Authorities, Expertise, and Culture .....	2-11
	D. Alignment of Potential Parent Organizations with MDA’s Mission .....	2-14
	E. Organizational Assessment Observations .....	2-21
3.	Acquisition Assessment .....	3-1
	A. Background.....	3-1
	B. Methodology.....	3-2
	1. Understanding the MDA acquisition process .....	3-3
	2. Understanding DoD 5000.....	3-3
	3. Surveying and understanding other DoD processes and programs.....	3-3
	4. Integrating the results .....	3-4
	C. Initial Considerations .....	3-4
	D. Description of the Acquisition Processes .....	3-5
	1. Missile Defense Agency prior to DTM.....	3-6
	2. Missile Defense Agency under DTM.....	3-12
	3. DoD 5000 Major Capability Acquisition .....	3-13
	E. Comparing Acquisition Processes .....	3-16
	1. Acquisition Processes .....	3-17
	2. Example Programs .....	3-22
	F. Other Acquisition Processes .....	3-23
	1. DoD 5000 Middle Tier of Acquisition .....	3-24
	2. Review of Rapid Capability Organizations (RCOs) .....	3-25
	G. Assessment: Should MDA transition to DoD 5000? .....	3-30
	1. Potential Benefits of Transition to DoD 5000 .....	3-30
	2. Risks of Transition to DoD 5000 .....	3-31
	3. Additional Points from Interviews .....	3-33
	H. Assessment: Should MDA use JCIDS?.....	3-33

- 1. Potential Benefits of Transition to JCIDS ..... 3-33
- 2. Risks of Transition to JCIDS ..... 3-35
- 3. Additional Points from Interviews ..... 3-36
- I. Acquisition Assessment Observations ..... 3-37
- 4. Summary ..... 4-1
  - A. MDA’s mission ..... 4-1
  - B. Organizational Assessment..... 4-1
  - C. Acquisition Assessment..... 4-3
  - D. Conclusions..... 4-4
  
- Appendix A List of Individuals Interviewed ..... A-1
- Appendix B Acronyms and Abbreviations..... B-1

## Tables

---

Table 2.1 MDA’s Mission and Responsibilities .....	2-4
Table 2.2 RDT&E Funding by System-of-Systems Component (FY 2020, \$ millions).....	2-8
Table 2.3 Capabilities (and Capability Gaps) of the Potential Parent Organizations ....	2-12
Table 2.4 Alignment of Potential Parents .....	2-16
Table 3.1 Oversight Comparison .....	3-8
Table 3.2 Potential Pros and Cons of Prior, Current, and DoD 5000 Approaches to MDA Oversight .....	3-21

## Figures

---

Figure 2.1 Schematic of the Missile Defense Management Structure .....	2-3
Figure 2.2 MDA 2021 Budget (\$millions) .....	2-6
Figure 2.3 Components of the BMDS system of systems.....	2-7
Figure 2.4 Assessment of Alignment .....	2-15
Figure 3.1 Milestones and Phases of DoD 5000 and MDA Acquisition Processes .....	3-6
Figure 3.2 Acquisition Process Documentation and Oversight” .....	3-19
Figure 3.3 Selected MDA and DoD 5000 Sensor, C2, and Interceptor Programs .....	3-23
Figure 3.4 Milestones and Phases of DoD 5000 MTA and Major Capability Acquisition .....	3-25

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# 1. Introduction

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## A. Historical Background

The desire for defenses against ballistic missiles arose during World War II with the arrival of the German V-2 rocket.<sup>3</sup> In the early days of missile defense, the Services had lead roles in investigating options. The U.S. Army and U.S. Army Air Forces, which became the U.S. Air Force in 1947, initially examined several concepts for defending against ballistic missiles. In the early 1950s, the Army established Project Plato, which evolved over time due to “Ever-changing requirements” and ultimately resulted in the development of the Phased Array Tracking Radar Intercept On Target (PATRIOT) system, named “in honor of the 1976 U.S. Bicentennial celebration.”<sup>4</sup>

As the threat of nuclear-tipped ICBMs grew at the start of the Cold War in the 1950s, the United States and the Soviet Union began to develop Anti-Ballistic Missile (ABM) systems to defend against these threats. In the United States, the Army, Navy, and Air Force all launched programs, “which blurred distinctions among the services’ roles and missions.”<sup>5</sup> The Army and Air Force in particular competed for the strategic defense mission, leading the Defense Secretary “to settle the dispute” by assigning the mission to the Army in 1958.<sup>6</sup> By then, the Army had already begun to develop the nuclear-armed Nike Zeus interceptor, and over the next decade, Nike Zeus transitioned consecutively to Nike-X (1963), Sentinel (1967), and Safeguard (1969), with each transition corresponding to changes in technology, threats, mission, and operations.

In 1972, the United States and the Soviet Union signed the ABM Treaty, which initially limited each side to ABM deployments at two fixed sites, but “When it became clear that neither nation would complete a second site, the two sides agreed in a 1974 Protocol that each would have only one ABM site.”<sup>7</sup> The United States deployed Safeguard to protect its ICBMs located near Grand Forks, North Dakota, but, “Having served its purpose as a political bargaining chip,” this site was operational only from October 1975 to February 1976.<sup>8</sup> The Soviet Union deployed its ABM system around Moscow and that system is still operational.

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<sup>3</sup> John R. Dabrowski, *Missile Defense: The First Seventy Years*, Missile Defense Agency, 8 August 2013, 1.

<sup>4</sup> *Ibid.*, 5–6.

<sup>5</sup> *Ibid.*, 6.

<sup>6</sup> *Ibid.*, 7.

<sup>7</sup> Steven A. Hildreth, *Ballistic Missile Defense: Historical Overview*, Congressional Research Service, 28 January 2008, 1.

<sup>8</sup> Dabrowski, 11.

In 1983, then-President Ronald Reagan announced the start of a new research and development program, the Strategic Defense Initiative (SDI), to defend against a large attack by the Soviet Union. Citing “the uncertain long-term future of offensive deterrence,” National Security Decision Directive 119 (issued January 6, 1984) directed that “the U.S. should investigate the feasibility of eventually shifting toward reliance upon a defensive concept.” It further directed that “the Secretary of Defense shall be responsible for the strategic defense program and is requested to create a specific management structure to implement the program. The program manager shall report directly to the Secretary of Defense regularly and shall be provided with authorities and responsibilities commensurate with the high priority of this initiative.” The Department of Defense established the Strategic Defense Initiative Organization (SDIO) in 1986. The SDIO director initially reported to the Secretary of Defense, but by the following year reporting was transitioned to the Deputy Secretary of Defense.<sup>9</sup> SDIO “managed a consolidated and expanded missile defense program that was created largely by combining existing projects under way in several government agencies.”<sup>10</sup>

Throughout the early development of missile defenses for protecting the United States against ICBMs, the weapons programs planned to use nuclear-armed interceptors to destroy incoming warheads. SDI, however, was to emphasize technologies involving nonnuclear kill concepts. In 1983 and 1984, the Army conducted a series of tests, called the Homing Overlay Experiment (HOE), which demonstrated the feasibility of a nonnuclear hit-to-kill interceptor. SDI designers also explored concepts employing “more exotic laser or x-ray devices in space designed to destroy incoming missiles.”<sup>11</sup> However, due to high cost and significant technical obstacles, SDIO announced a less ambitious Strategic Defense System (SDS) Phase I Architecture, which was envisioned to deploy only “land-based and space-based sensors and interceptors.”<sup>12</sup> Nevertheless, deployment of such a system would have violated the ABM Treaty.

With the end of the cold war, then-President George H.W. Bush formally reoriented the SDI program in 1990 “to develop strategic defenses against limited attacks on the United States and theater defense against attacks by short-range ballistic missiles on overseas forces.”<sup>13</sup> The new program, called Global Protection Against Limited Strikes (GPALS), was to be an integrated architecture based on three elements: a ground-based National Missile Defense (NMD) system with up to 1,000 ground-based interceptors at six sites as well as space-based and mobile sensors; a force of transportable ground- and sea-based Theater Missile Defense (TMD) systems; and a space-based global defense system with 1,000 space-based Brilliant Pebbles interceptors.<sup>14,15</sup>

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<sup>9</sup> James Walker, Lewis Bernstein and Sharon Lang, *Seize the High Ground: The Army in Space and Missile Defense*, U.S. Army Space and Missile Defense Command, 2003, 105.

<sup>10</sup> Dabrowski, 12.

<sup>11</sup> Hildreth, 2–3.

<sup>12</sup> Ibid.

<sup>13</sup> Dabrowski, 14.

<sup>14</sup> Dabrowski, 14.

<sup>15</sup> Walker, 173.

SDIO retained overarching responsibility for GPALS, and a new Program Executive Office (PEO) for GPALS (renamed PEO Missile Defense in 1993 and then PEO Air and Missile Defense in 1996) was created under the U.S. Army Strategic Defense Command (USASDC) to provide “a centralized organizational structure for the acquisition and deployment of missile defenses” for both SDIO and the Army.<sup>16</sup>

Around the same time, the Missile Defense Act of 1991 (part of the National Defense Authorization Act for Fiscal Years 1992 and 1993) stated that “It is a goal of the United States to” deploy an ABM system to provide “a highly effective defense of the United States against limited attacks of ballistic missiles,” maintain strategic stability, and provide “highly effective theater missile defenses.” Further, the Secretary of Defense “shall develop for deployment by the earliest date allowed by the availability of appropriate technology or by fiscal year 1996 a cost-effective, operationally-effective, and ABM Treaty-compliant anti-ballistic missile system at a single site as the initial step toward deployment of an anti-ballistic missile system . . . designed to protect the United States against limited ballistic missile threats, including accidental or unauthorized launches or Third World attacks.” This Act also “urges the President to pursue immediate discussions with the Soviet Union on the feasibility and mutual interests of amendments to the ABM Treaty” to enable the deployment of the anti-ballistic missile system. A revision of the Missile Defense Act Of 1991 (in the National Defense Authorization Act for Fiscal Year 1993) included language requiring the United States to “not develop, test, or deploy any ballistic missile defense system, or component thereof, in violation of the treaty” while deploying an ABM system.

Arguing that ICBMs were not an immediate threat to the homeland, the Clinton Administration initially focused its missile defense efforts on TMD and on compliance with the ABM Treaty, and “broke up the GPALS architecture into separate components, cancelled the Brilliant Pebbles program, and changed the name of SDIO to the Ballistic Missile Defense Organization (BMDO) in May 1993 as a reflection of the program’s reorientation.”<sup>17</sup> BMDO’s TMD efforts included the Army’s PATRIOT Advanced Capability-3 (PAC-3) and Theater High Altitude Area Defense (THAAD) systems; the Air Force’s developmental Airborne Laser system; and improvements to the Navy’s Aegis air defense system and Standard Missile (SM) interceptor. DoD Directive 5134.09 (issued June 14, 1994) “establishes the BMDO as an agency of the Department of Defense” and states that the “Under Secretary of Defense for Acquisition and Technology (USD(A&T)), as the Defense Acquisition Executive (DAE), shall provide DoD oversight and guidance for the BMD acquisition program, and shall conduct formal reviews, including Defense Acquisition Board milestone reviews, for [Ballistic Missile Defense Programs]. All such reviews shall emphasize streamlined acquisition strategies.” Having the BMDO director

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<sup>16</sup> Walker, 174.

<sup>17</sup> Dabrowski, 15.

report to USD(A&T) rather than the Secretary of Defense reflected a “shift from research to development and acquisition of systems.”<sup>18</sup>

Initially NMD efforts during the Clinton Administration were focused only on technology development and were lower priorities than TMD, but that would change in the mid-1990s. The Missile Defense Act of 1995 (in the National Defense Authorization Act for Fiscal Year 1996) stated that, based on Intelligence Community estimates, “the trend in missile proliferation is toward longer range and more sophisticated ballistic missiles” and “North Korea may deploy an intercontinental ballistic missile capable of reaching Alaska or beyond within five years.” The Act also raised questions regarding the ABM Treaty, such as “The concept of mutual assured destruction . . . , which is the major philosophical rationale underlying the ABM Treaty, is now questionable as a basis for stability in a multipolar world in which the United States and the states of the former Soviet Union are seeking to normalize relations and eliminate Cold War attitudes and arrangements.”

In response to the changing environment, in 1996 the Clinton administration developed a new NMD strategy, still compliant with the ABM Treaty, to defend the homeland against small numbers of ICBMs. With this strategy, NMD technologies would continue to be developed, and a deployment decision would be made in 2000 based on whether the system was “technologically feasible and warranted by prospective threat.”<sup>19</sup> Further impetus was provided by the National Missile Defense Act of 1999, which put into law that “It is the policy of the United States to deploy as soon as is technologically possible an effective National Missile Defense system capable of defending the territory of the United States against limited ballistic missile attack (whether accidental, unauthorized or deliberate).” In September 2000, however, President Clinton decided to defer to his successor the decision to deploy an NMD system “following a series of missile defense test failures, delays in some program elements, and a new wave of controversy over deploying an NMD system that included debate on altering the ABM Treaty.”<sup>20</sup>

## **B. Missile Defense Agency**

Soon after the start of his administration in 2001, then-President George W. Bush made clear that NMD would be one of his top national security priorities. In December 2001 he announced that he would be formally notifying Russia that the United States would withdraw from the ABM Treaty, arguing that the treaty “hinders our government's ability to develop ways to protect our people from future terrorist or rogue state missile attacks.”<sup>21</sup> He also argued that the treaty had been made with the Soviet Union, but since the United States and Russia had a better relationship, the treaty was no longer needed. The treaty was terminated on June 13, 2002.

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<sup>18</sup> Walker, 176–177.

<sup>19</sup> Hildreth, 4.

<sup>20</sup> Dabrowski, 15–16.

<sup>21</sup> Jim Garamone, “Bush Announces ABM Treaty Withdrawal,” American Forces Press Service, December 13, 2001, <https://archive.defense.gov/news/newsarticle.aspx?id=44365>



In January 2002, then-Secretary of Defense Donald Rumsfeld issued a memorandum on the direction of the missile defense program. This memo redesignated BMDO as the Missile Defense Agency (MDA) and stated that the MDA Director would report directly to the Under Secretary of Defense (Acquisition, Technology, and Logistics) (USD(AT&L)). The memo also established under MDA a single program to develop an integrated Ballistic Missile Defense System (BMDS) that would provide a layered defense “to intercept missiles in all phases of their flight (i.e., boost, midcourse, and terminal) against all ranges of threats.” An emphasis was placed on putting defenses in place as soon as possible and then “Improve the BMD system through incremental improvements and block upgrades to BMDS elements over time.” Whereas MDA would develop the BMDS “and baseline the capability and configuration of its elements,” the Services were to “procure and provide for operation and support.”

Rumsfeld argued that “The special nature of missile defense development, operations, and support calls for non-standard approaches to both acquisition and requirements generation” and, in particular, called for “a capability-based requirements process.” The memo also emphasized a need for MDA to have “some expanded responsibility and authority” and laid out what that should look like. Finally, to confirm his “commitment to rapidly capitalize on promising concepts and promptly adjust program priorities,” Rumsfeld asked “the Deputy Secretary of Defense to ensure that decision-making cycle times are as rapid as possible for proposed executive decisions” and promised to “support additional or revised statutory authority as identified by the Director, MDA, to reduce development time and enhance program success.”

In December, 2002, President Bush then issued National Security Presidential Directive 23, which specified the fundamental role that missile defenses will play in “the United States’ broader efforts to transform our defense and deterrence policies and capabilities to meet the new threats we face. Defending the American people against these new threats is **my highest priority as Commander in Chief, and the highest priority of my Administration**” [emphasis in the original]. The directive also made clear that the administration’s “policy is to develop and deploy, at the earliest possible date, ballistic missile defenses” and given the “progress made to date in our development efforts, the United States plans to begin deployment of a set of missile defense capabilities in 2004.” This initial deployment was intended to be “a starting point for fielding improved and expanded missile defense capabilities later.”

By the end of 2004, MDA had deployed five Ground-Based Interceptors (GBIs) at Fort Greely, Alaska, and began limited operations of the BMDS. A GBI is a three-stage, solid-fuel booster with an Exo-atmospheric Kill Vehicle (EKV) that uses the kinetic energy from a direct hit to destroy an incoming warhead outside of Earth’s atmosphere. The GBIs are part of the Ground-based Midcourse Defense (GMD) system. The GMD element of the BMDS was intended to engage limited intermediate- and long-range ballistic missile threats in the midcourse phase of flight to protect the United States. In addition to the GBIs, the GMD system consists of interceptor launch facilities, fire control nodes, and a communications network, and is supported by multiple sensors which detect and track ballistic missile threats. Warfighters of the 49th Missile Defense

Battalion at Fort Greely, Alaska and the 100th Missile Defense Brigade at Colorado Springs, Colorado, operate the system.

DoD Directive 5134.09 was updated in 2004 and then again in 2009 to formalize MDA's mission, organization, management, responsibilities, functions, relationships with other organizations, and authorities. However, the special status and authorities granted to MDA resulted in some concerns and challenges from the beginning. For example, Congress expressed concerns about oversight of the missile defense program and whether the Department would provide adequate transparency on its missile defense programs, priorities, and commitments.<sup>22</sup> Also, the Services were typically "not closely involved in determining requirements or in the development process," which "worked against orderly transition of capabilities from MDA to the Services, blurring responsibilities for operation and support and for budget formulation and execution."<sup>23</sup>

In an attempt to address some of these concerns, then-Secretary of Defense Robert Gates oversaw a series of changes in management practices associated with missile defense. For example, the Missile Defense Executive Board (MDEB) was established in March 2007 to bring together senior stakeholders across the Department to provide guidance for missile defense.<sup>24</sup> In addition, the Warfighter Involvement Process, chaired by U.S. Strategic Command, assessed force structure and inventory requirements.<sup>25</sup> Also, in September 2008, the then-Deputy Secretary of Defense issued guidance, called the BMDS Life Cycle Management Process, which enabled the Services, Joint Staff, Combatant Commands, and others "to participate in and influence the development of the Missile Defense Agency's annual program plan and budget submittal" and which "provided guidelines for responsibilities and authorities for resource execution as the developing elements of the [BMDS] reach maturity and are transitioned to the Military Departments for operation and support."<sup>26</sup> In June 2009, MDA's test planning was modified to integrate recommendations made by the Director, Operational Test and Evaluation (DOT&E), and others.<sup>27</sup>

The Obama Administration in 2010 completed the Ballistic Missile Defense Review, which was mandated by Congress and guided by a Presidential directive and considered U.S. BMD policies, strategies, plans, and programs. One of the conclusions of the review was that DoD "does not see benefit in bringing MDA into the Joint Capabilities Integration Development System (JCIDS) or the full DoD 5000 acquisition reporting process at this time."<sup>28</sup> It further states that the

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<sup>22</sup> Department of Defense, *Ballistic Missile Defense Review Report*, February 2010, 44.

<sup>23</sup> *Ibid*, 41–42.

<sup>24</sup> *Ibid*, 37–38.

<sup>25</sup> *Ibid*, 41–42.

<sup>26</sup> *Ibid*, 37–38.

<sup>27</sup> *Ibid*.

<sup>28</sup> *Ibid*, vii.

existing process “functions well to define requirements and acquire needed capabilities in a timely fashion.”<sup>29</sup>

Over the past decade, the roles and responsibilities of the Missile Defense Agency have expanded. In 2013, MDA was made the Technical Authority for Integrated Air and Missile Defense (IAMD). In this role, MDA “can create and recommend system standards, modifications, and other joint technical requirements” to help integrate air and missile defense capabilities, but “The military departments must . . . plan, budget, and execute those requirements that the Services determine are worth the investment.”<sup>30</sup> In addition, the National Defense Authorization Act for Fiscal Year 2017 designated the MDA Director as Executive Agent for the Department of Defense for the development of a hypersonic defense capability and states that, as Executive Agent, the Director shall develop architectures to detect and intercept hypersonic weapons.

The NDAA for FY 17 also included a new national missile defense policy directing the United States “to maintain and improve an effective, robust layered missile defense system capable of defending the territory of the United States, allies, deployed forces, and capabilities against the developing and increasingly complex ballistic missile threat,” and repealing Section 2 of the National Missile Defense Act of 1999. In doing so, the new policy removed the more limited goal of defending the United States “against limited attacks of ballistic missiles.”

The 2019 Missile Defense Review (MDR), completed under the Trump Administration, then expanded the missile defense threat to include “rogue states and revisionist powers” and to include ballistic missiles, cruise missiles, and hypersonic vehicles.<sup>31</sup> The 2019 MDR also notes that “The FY 2017 NDAA requires the Secretary of Defense to designate a Service or Defense Agency with acquisition authority with respect to the capability to defend the homeland against offensive cruise missiles,” and states that the Secretary of Defense will designate the organization that will have this authority.<sup>32</sup> MDA has recently initiated internal efforts exploring technical architecture designs for defense of the homeland against cruise missiles.

The 2019 MDR also provided an updated description of “the policies, strategies, and capabilities” guiding missile defense programs. It reiterated the need to “prioritize speed of delivery, continuous adaptation, and frequent modular upgrades.” To accomplish these goals, “DoD must adopt processes and cultures that enable MDA and the Services to deliver missile defense capabilities faster, learn from failure and rapidly adjust, and swiftly adapt systems once fielded. DoD cannot meet this goal by returning MDA to the standard acquisition and requirements

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<sup>29</sup> Ibid, 43.

<sup>30</sup> Gabriel Almodovar, Daniel P. Allmacher, Morgan P. Ames III and Chad Davies, “Joint Integrated Air and Missile Defense: Simplifying an Increasingly Complex Problem,” Joint Force Quarterly 88, January 10, 2018, 78.

<sup>31</sup> Department of Defense, *Missile Defense Review*, 2019, III.

<sup>32</sup> Ibid, 45.

generation processes. DoD must instead continue to streamline and refine acquisition processes and ensure flexibility in the development, testing, and fielding of missile defenses.”<sup>33</sup>

The NDAA for FY 20 again changed the national missile defense policy. The new policy specifies that the United States maintain and improve “(A) an effective, layered missile defense system capable of defending the territory of the United States against the developing and increasingly complex missile threat posed by rogue states; and (B) an effective regional missile defense system capable of defending the allies, partners, and deployed forces of the United States against increasingly complex missile threats” but the United States should “rely on nuclear deterrence to address more sophisticated and larger quantity near-peer inter-continental missile threats to the homeland.” This NDAA also specifies that “the Secretary of Defense shall, as the Secretary considers appropriate, redesignate all strategies, policies, programs, and systems under the jurisdiction of the Secretary to reflect that missile defense programs of the United States defend against ballistic, cruise, and hypersonic missiles in all phases of flight.”

Recent DoD organizational changes and a high-profile cancellation of an MDA program have resulted in additional congressional focus on MDA. Organizationally, in 2018 the Under Secretary of Defense for Acquisition, Technology, and Logistics (AT&L) was split into two separate organizations: the Under Secretary for Research and Engineering (USD (R&E)) and the Under Secretary for Acquisition and Sustainment (USD(A&S)). Since then, MDA has reported to USD(R&E), leaving Congress to wonder if this is the best option. Then, in 2019, DoD cancelled the Redesigned Kill Vehicle (RKV) program due to technical challenges. MDA’s plan was to field the RKV in 2023 as part of a significant upgrade to the GBI fleet; now the upgrades must be postponed while DoD develops a different option, the Next-Generation Interceptor (NGI), which could take on the order of 10 years to develop and field. These issues resulted in Congress raising questions at the end of 2019 regarding MDA’s place in the DoD hierarchy and its acquisition process (as discussed in the next section).

During roughly the same time frame, DoD was conducting a study of MDA’s acquisition process to determine, given that DoD has fielded missile defense capabilities, whether “a modified approach that better balances program schedule with technical, cost, and integration risk may be justified.”<sup>34</sup> On March 13, 2020, Deputy Secretary of Defense David Norquist issued Directive-type Memorandum (DTM) 20-002, “Missile Defense System Policies and Governance,” which “Establishes policy, assigns responsibilities, and prescribes procedures for missile defense system (MDS) research, development, test, and evaluation; procurement; and operations and sustainment in order to reduce risk and promote MDS element transfers to the Military Departments while maintaining agility in accordance with the 2019 Missile Defense Review.” The DTM significantly increased oversight of MDA’s activities, reduced the responsibilities of USD(R&E), and added to the responsibilities of USD(A&S) and OSD Cost Assessment and Program Evaluation (CAPE) as

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<sup>33</sup> Ibid, 62.

<sup>34</sup> Deputy Secretary of Defense Memorandum, April 4, 2019.

well as those of the Military Departments and Combatant Commanders. For example, CAPE will now develop an independent cost estimate (ICE) before a product development decision (PDD) and production decision (PD); USD(A&S) serves as the decision authority at the Technology Development Decision (TDD), PDD, and PD for MDS elements that meet the criteria for Acquisition Category I Programs or may be of special interest; and USD(R&E) conducts an independent technical risk assessment (ITRA) before PDD and PD for MDS elements and assesses TDD, PDD, and PD readiness. The Director, MDA, remains “under the authority, direction, and control” of the USD(R&E). Furthermore, the DTM directs that the changes it describes “must be incorporated into DoD Directive 5134.09, Missile Defense Agency Instruction 5013.02-INS, and Missile Defense Agency Manual 5013.14-M.”

### **C. Congressionally Mandated Study**

The National Defense Authorization Act (NDAA) for Fiscal Year 2020, Sec.1688(a), Independent Study, mandated the following study of MDA’s organization and acquisition processes.

*SEC. 1688. ORGANIZATION, AUTHORITIES, AND BILLETS OF THE MISSILE DEFENSE AGENCY.*

*(a) INDEPENDENT STUDY.-*

*(1) ASSESSMENT.-In accordance with paragraph (2), the Secretary of Defense shall seek to enter into a contract with a federally funded research and development center to conduct a study assessing-*

*(A) the organization of the Missile Defense Agency under the Under Secretary of Defense for Research and Engineering pursuant to section 205(b) of title 10, United States Code;*

*(B) alternative ways to organize the Agency under other officials of the Department of Defense, including the Under Secretary for Acquisition and Sustainment and any other official of the Department the federally funded research and development center determines appropriate; and*

*(C) transitioning the Agency to the standard acquisition process pursuant to Department of Defense Instruction 5000, including both the risks and benefits of making such a transition.*

*(2) SCOPE OF STUDY.-Before entering into the contract with a federally funded research and development center to conduct the study under paragraph*

*(1), the Secretary shall provide to the congressional defense committees an update on the scope of such study.*

*(3) SUBMISSION TO DOD.-Not later than 180 days after the date of the enactment of this Act, the federally funded research and development center shall submit to the Secretary the study conducted under paragraph (1).*

*(4) SUBMISSION TO CONGRESS.-Not later than 30 days after the date on which the federally funded research and development center submits to the Secretary the study under paragraph (1), the Secretary shall submit to the congressional defense committees the study, without change.*

The Department of Defense selected IDA to conduct this congressionally mandated independent study. MDA funded the study and, for the purposes of coordinating the study, the DoD “customers” were

- Assistant Secretary of Defense for Acquisition, A&S
- Director, Defense Research and Engineering, Advanced Capabilities, R&E
- Director, Strategic, Defensive, and Space Programs Division, OSD CAPE.

An IDA Senior Review Group (SRG) reviewed draft products and provided feedback to the study team regarding IDA’s assessments and presentation of results. The SRG consisted of

- Gen (ret) Norty Schwartz, President of IDA, Retired Chief of Staff of the Air Force
- Dr. David S C Chu, Former President of IDA, Retired USD for Personnel and Readiness
- Gen (ret) Larry Welch, Former President of IDA, Retired Chief of Staff of the Air Force
- Mr. Phil Major, Vice President, Programs, IDA
- Dr. Steve Warner, Director, System Evaluation Division, IDA
- ADM (ret) John Harvey, Director, Strategy, Forces and Resources Division, IDA.

The study schedule was as follows:

- Study initiation on 10 August 2020
- Progress update briefings to IDA SRG on 13 October 2020 and to DoD customers on 30 October 2020
- Draft results briefings to IDA SRG on 17 December and to DoD customers on 5 January 2021
- IDA Senior Review Group review of report in January 2021

- Transmit report to DoD customers for acceptance and approval of classification markings in February 2021.

The study consisted of two main parts, and IDA conducted them in parallel with each part informing the other. The first part was an assessment of the location of MDA in the DoD hierarchy, including its current location under the Under Secretary of Defense for Research and Engineering [USD(R&E)], pursuant to section 205(b) of title 10 as well as potential alternate locations, such as under the Under Secretary of Defense for Acquisition and Sustainment [USD(A&S)] or other DoD officials that we found could be suitable or that were suggested to us. The findings for this part of the study included the pros and cons for different DoD leadership organizations in terms of their potentials to enable MDA to effectively carry out its missions while also enabling oversight.

The second part of the study was an assessment of transitioning MDA to the standard acquisition process pursuant to DoD Instruction 5000, and included both the potential risks and benefits of making such a transition. IDA sought to understand the current MDA acquisition process and the DoD 5000 acquisition process, and to survey other relevant DoD acquisition processes. Although not explicitly called out in the congressional language, we included the Joint Capabilities Integration and Development System (JCIDS) in this assessment. The results for this part of the study included the pros and cons of transitioning MDA to the standard acquisition process (DoD 5000) versus leaving MDA with its current processes for missile defense acquisition and requirements generation.

IDA's overarching approach to conducting the study began by examining MDA's mission, roles, and responsibilities and its relationships to other organizations including OSD, Combatant Commands, Military Departments, and other Defense Agencies. The study team then engaged in discussions with current and former government officials to hear their perspectives and learn from their experiences. The list of individuals that the study team spoke to is provided in Appendix A. IDA also reviewed relevant information, documents, and existing reports from IDA and other organizations. We analyzed and compared the information we received from all sources and identified common themes.

Chapter 2 documents IDA's methodology and findings for our organizational assessment, and Chapter 3 does so for our assessment of MDA's acquisition process. Chapter 4 provides a summary of our findings and conclusions.

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## 2. Organizational Assessment

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Congress directed this study to assess the current assignment of MDA oversight responsibilities to the Under Secretary of Defense for Research and Engineering [USD(R&E)], evaluate the implications of moving oversight responsibilities to the Under Secretary of Defense for Acquisition and Sustainment [USD(A&S)], and consider the implications of assigning MDA to other DoD officials that the study team found might be suitable or that were suggested to us. This chapter presents IDA's approach for this assessment and our findings.

### A. Methodology

The study team considered in detail the strengths and weaknesses of four potential parent organizations for overseeing MDA: USD(R&E), USD(A&S), the Space Force, and USSTRATCOM. As noted above, the first two of the alternatives were stipulated by Congress. In addition, the study included Space Force as an example of a Service as a potential parent organization because it has many similar or common mission requirements in the areas of sensors and communications. IDA also included USSTRATCOM as an example of a Combatant Command as a potential parent. USSTRATCOM has the strategic deterrence mission, a global perspective, and is part of the missile defense requirements development and prioritization efforts. Finally, some of the officials interviewed for this study suggested that the Deputy Secretary of Defense (DEPSECDEF) would be a good location for MDA oversight. This would raise the visibility of MDA's mission to a high level in DoD. However, DEPSECDEF is already heavily burdened with many responsibilities and, as a practical matter, would likely delegate oversight of MDA to an Under Secretary. So, IDA did not consider this option further.

In weighing the strengths and weaknesses of possible parent organizations, the assessment focuses on three characteristics the IDA study team considers essential for a parent organization to effectively perform its roles. Specifically, the assessment addresses the following questions:

- Does the organization have responsibilities and authorities consistent with the mission of MDA?
- Does the organization have leadership and staff with the requisite expertise and experience?
- Does the organization have incentives and culture consistent with MDA's mission and the responsibility to objectively assess MDA's performance?

To address these questions for each of the potential parent organizations, the study team documented the organization's authorities, leadership and staff expertise, and the alignment of its culture and incentives with the missile defense mission. Section B describes the mission, responsibilities, and programs of MDA. Section C describes the four alternative parent organizations and their relevant capabilities. Section D provides the detailed assessment of the alignment of each parent organization's capabilities with MDA's mission and responsibilities. We close in Section E with observations based on the organizational assessment.

## **B. MDA's Mission, Responsibilities, and Program**

MDA was established in 2002 by Defense Secretary Rumsfeld to accelerate the fielding of missile defense capabilities.<sup>35</sup> The goal was to produce an integrated system-of-systems Ballistic Missile Defense System (BMDS) that “layers defenses to intercept missiles in all phases of their flight (i.e., boost, midcourse, and terminal) against all ranges of threats.”<sup>36</sup> MDA was also directed to “develop and test technologies, use prototype and test assets to provide early capability, if necessary, and improve the effectiveness of deployed capability by inserting new technologies as they become available or when the threat warrants an accelerated capability.”<sup>37</sup>

The charter created in MDA an Agency that consolidates responsibility for missile defense in three dimensions. First, MDA was assigned responsibility to conceive, develop, and build the integrated suite of BMDS capabilities—including sensors, communications and command networks, and interceptors. This provided MDA the opportunity to make system-wide design and tradeoff decisions, providing the span of control and design flexibility necessary to quickly create a fieldable ballistic missile defense system. Second, MDA consolidated authority across DOD's major decision and management processes, including requirements trade authority, acquisition milestone decision authority, budget control, and contracting authority. This simplified the management structure, and most observers believe it significantly expedited decision-making. Third, MDA was provided the consolidated budget and authority necessary both to build the components of the BMDS and to establish the cross-Service partnerships necessary to field and operate the systems.

MDA performs its mission under a governance structure designed to involve major stakeholders. Figure 2.1 provides a high-level schematic of this structure. Oversight for MDA was initially assigned to USD(AT&L), acting as the Principal Staff Assistant (PSA) for the Agency. When the USD(AT&L) was split into USD(A&S) and USD(R&E), the responsibility for MDA was assigned to USD(R&E). A Missile Defense Executive Board (MDEB) is chaired by USD(R&E) and includes USD(A&S), the Services, Combatant Commands, and OSD Principal Staff Assistants who advise the PSA and serve as channels of communication. The MDEB is

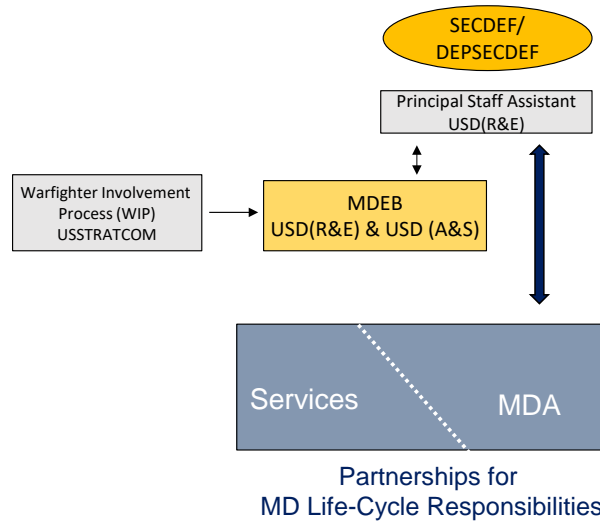
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<sup>35</sup> Donald Rumsfeld, “Missile Defense Program Direction,” January 2, 2002.

<sup>36</sup> Donald Rumsfeld, “Missile Defense Program Direction,” January 2, 2002.

<sup>37</sup> Ibid.

chartered to “oversee implementation of strategic policies and plans, program priorities, and investment options...”<sup>38</sup> MDEB meetings dealing with acquisition-related issues are co-chaired by USD(R&E) and USD(A&S).<sup>39</sup> The Warfighter Involvement Process (WIP), chaired by USSTRATCOM, consolidates the capability priorities of the Combatant Commands and Services and provides them to the MDEB to support the development of MDA requirements. Chapter 3 discusses the requirements process in depth.



**Figure 2.1 Schematic of the Missile Defense Management Structure**

MDA’s responsibilities have expanded since the Agency was established in 2002. Over time, MDA has been assigned certain roles relating to hypersonic missile defense and integrated air and missile defense. Table 2.1 shows that the nature of MDA’s responsibilities and the level of involvement vary significantly across these areas. However, MDA’s responsibilities generally remain narrowly defined in each of these areas and its predominant focus remains on BMDS.

<sup>38</sup> Gordon England, Deputy Secretary of Defense Memorandum, “Missile Defense Executive Board (MDEB),” March 15, 2007.

<sup>39</sup> Section 1681 of Public Law 1115-232 and Section 1676 of Public Law 115-91 govern the leadership of the MDEB.

**Table 2.1 MDA’s Mission and Responsibilities**

	BMD	Hypersonic Defense	Cruise missile defense (CMD) <sup>a</sup>	Integrated Air and Missile Defense (IAMD)
Homeland defense	System of Systems • Tech. Requirements • Strategy & Plans • Systems Engineering, Integration, & Architectures • Resource Management & Program Execution • Service Partnerships	Sensors only	Internal efforts exploring technical architecture designs	N/A
Theater defense		Sensors and designing technical architecture	No	<u>Technical Authority</u> Recommend architectures, standards, joint technical requirements
Service roles <sup>b</sup>	Infrastructure, Operations & Support <sup>c</sup>	Contribute weapons to defense	Theater CMD; Contribute to homeland	Implement MDA’s recommendations as they see fit

<sup>a</sup> 2019 MDR requires SecDef to designate an organization with homeland CMD acquisition authority

<sup>b</sup> MDA also has relationships with other orgs and missions

<sup>c</sup> MDA has MoAs with the Services

The question of what MDA’s responsibilities should be for these emerging threats provides important context for the organizational design questions addressed in this chapter. The alignment of MDA with alternative parent organizations would potentially change if MDA’s focus were redirected. Nevertheless, MDA’s predominant focus remains on BMD, where it has end-to-end responsibility for developing and procuring system-of-system capabilities. Therefore, MDA’s responsibilities and programs for BMD provide the focus for the assessments that follow.

### 1. MDA’s responsibilities for Ballistic Missile Defense

The first column of Table 2.1 summarizes the current assignments of MDA and Service responsibilities for ballistic missile defense. The salient features of MDA’s functions, which effectively consolidate within MDA full life-cycle responsibility for developing, procuring, and sustaining the components of the BMDS, include the following:

1. Requirements: MDA plays the central role in establishing requirements for missile defense systems and elements using a capabilities-based approach exempt from DOD’s mainstream Joint Capabilities Integration and Decision System (JCIDS). The Warfighter’s Involvement Process (WIP), chaired by the Commander, USSTRATCOM, provides a venue for advising on MDA’s requirements and priorities. This process receives and consolidates recommendations from the Combatant Commands and

Services that are used by MDA to formulate “achievable requirements” that are then reviewed and approved by the MDEB and the PSA.

2. Strategies, plans, and architectures: MDA creates DOD’s strategies, plans, and architectures for developing and fielding missile defenses. The BMD system-of-systems architecture integrates sensors and interceptors through the C2BMC network to create a layered defense that creates multiple intercept opportunities.
3. Systems engineering and integration: MDA performs systems engineering and integration (SE&I) for the BMDS as a whole as well as for its individual elements. MDA conducts the systems engineering needed to flow requirements (which it has developed itself) down to contract specifications. The Agency also conducts the systems engineering needed to integrate the operation of the sensors and interceptors it has developed along with the Command, Control, Battle Management, and Communications (C2BMC) system for missile defense that the Agency has developed and fielded in conjunction with the Services and the COCOMs.
4. Resource Management and Program Execution: MDA has independent (of the Services or any other Defense Agencies) resourcing, budget, and contracting authority (including determining contract technical and other specifications as well as conducting source selections).<sup>40</sup> The agency programs and contracts for new system development and production, development and procurement of upgrades, and sustains the deployed systems.
5. Cross-Service partnerships: MDA has established numerous cross-service acquisition-related partnership agreements establishing working relationships with the Services. As described above, the Services participate in the Warfighter Involvement Process and sit on the Missile Defense Executive Board. In executing programs, MDA establishes hybrid program offices composed of agency and Service personnel to execute missile defense programs. The agency enters into memoranda of agreement with the Services outlining how MDA and the Services will partner to develop, field, and integrate elements of the BMDS.

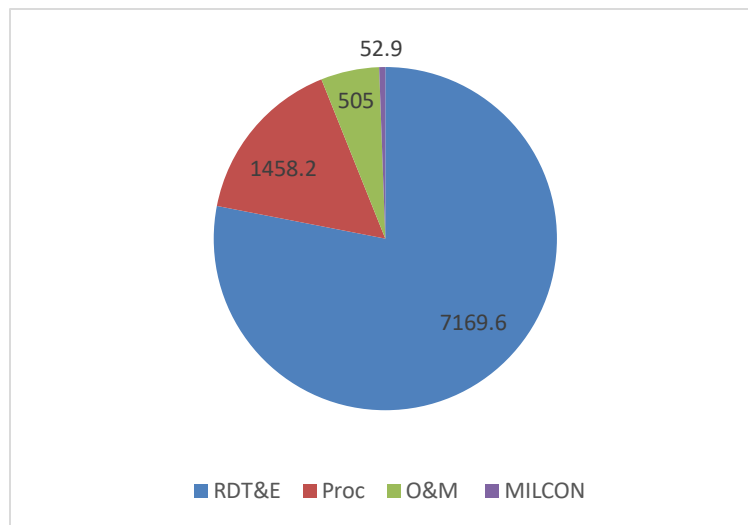
As this brief summary makes clear, MDA has the lead responsibility for the development, procurement, and sustainment of the BMD system-of-systems. To varying degrees, the Services coordinate with MDA through the MDA governance structure and participate in these activities through hybrid program offices. A transition from MDA to the Services occurs when the BMDS components are fielded. The Services have the lead responsibilities for establishing the infrastructure for fielding the BMD components and operating the fielded systems.

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<sup>40</sup> MDA contracts are reviewed by Defense Contract and Pricing in OUSD(A&S) per the Defense Federal Acquisition Regulations. MDA’s program/resources are currently overseen and have been adjusted by the USD(R&E), to whom the Director, MDA currently reports.

## 2. MDA’s Program and Budget

MDA’s budget in FY 2020 is approximately \$9.1 billion (this is slightly above the average for the prior 10 fiscal years, FY 2010 to FY 2019).<sup>41</sup> A breakdown by major budget activities is provided in Figure 2.2. About 78 percent of MDA funding (\$7,169 million) is for research, development, test, and evaluation (RDT&E). Of this amount, 98 percent is in budget activity 6.4, Advanced Concept Development and Prototyping. While MDA is responsible for all aspects of research, development, test, and evaluation for missile defenses, S&T activities only comprise about 1 percent of its budget (Budget Activities (BAs) 2 and 3) and has historically been small (less than 2 to 3 percent of the total MDA budget).<sup>42</sup>



**Figure 2.2 MDA 2021 Budget (\$millions)**

As shown in Figure 2.2, about 15 percent of the MDA budget is for procurement (\$1,458 million). The balance of MDA funding is mainly for operations and maintenance (\$505 million). Military construction accounts for only about 0.5 percent of funding (\$53 million).

MDA has for at least the last decade functioned predominantly (as measured by its budgets) in a manner analogous to a Service systems command. That is, MDA has initiated the development and production of weapon systems including several versions of Standard Missile 3, Aegis Ashore, THAAD, LRDR, the Next Generation Interceptor, and its predecessor, the Re-Designed Kill Vehicle. Such acquisition programs, for which the Agency budgets and often forms hybrid program offices with the Services to execute, span the Air Force (primarily sensors) as well as the Navy and Army (both sensors and interceptors). MDA budgets for and sustains

<sup>41</sup> Department of Defense, *2019 Missile Defense Review*, Figure 19, p. 40.

<sup>42</sup> Advanced Technology Development (BA 6.3) was \$45 million in FY 2021. This compares with an average of \$250 million over the eight-year period from FY 2002 through FY 2009, and \$260 million over the seven-year period from FY 2010 through FY 2016. Source: Thomas Karako, et. al., “The Missile Defense Agency and the Color of Money,” Center for Strategic and International Studies, July 2016, Figure 5.5, p. 34.

engineering for the programs it has initiated once they are deployed and are operational. The major components of the BMDS system-of-systems are illustrated in Figure 2.3. They include

- Command and Control, Battle Management and Communications (C2BMC)
- Sensors (e.g., Space-based Infrared System (SBIRS), Upgraded Early Warning Radars (UEWRs), Long-Range Discrimination Radar (LRDR), Aegis BMD SPY Radars, Sea-Based X-band Radar (SBX-1), AN/TPY-2 Surveillance Transportable Radar, and Hypersonic and Ballistic Tracking Space Sensor (HBTSS))
- Interceptors (GBI, Aegis (SM-3, SM-6), THAAD, PAC-3).

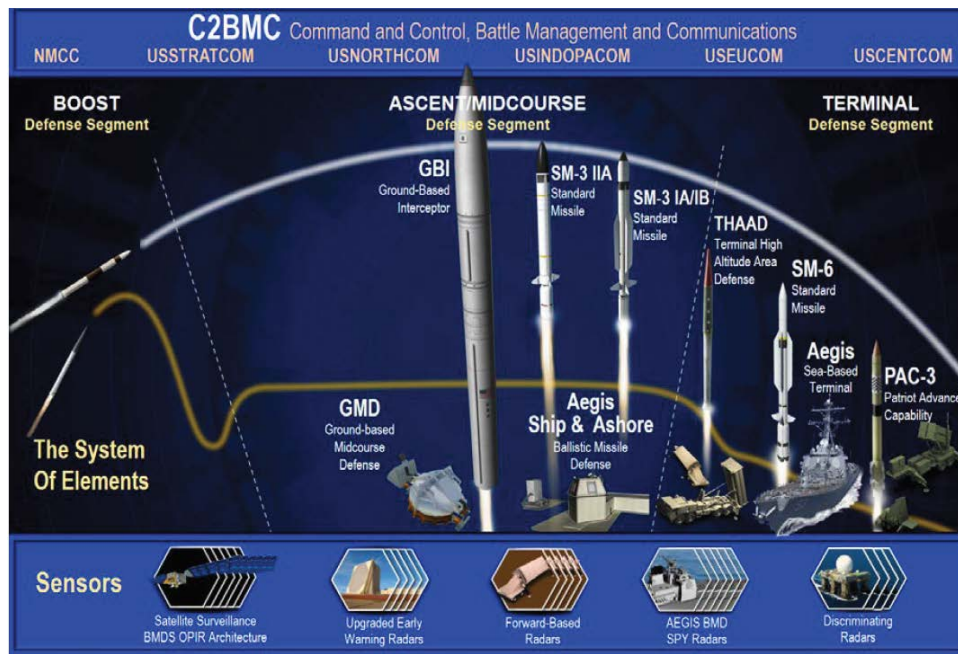


Figure 2.3 Components of the BMDS system of systems

Table 2.2 provides the distribution of RDT&E funding across the major activities within the MDA program. About 56 percent of the 2020 budget went directly to the three major categories of BMDS components: sensors, C2BMC, and interceptors; another 18 percent of the budget supported testing and targets. The distribution of expenditures also underscores the breadth of MDA’s technical responsibilities, spanning the life cycle of development, procurement, and support across the range of BMDS sensors, command and control networks, and interceptors.

**Table 2.2 RDT&E Funding by System-of-Systems Component (FY 2020, \$ millions)**

MDA Program Area	Percentage of MDA RDT&E Funding (\$7,169 million)
Sensors	10
C2BMC	8
Interceptors (Land and Sea)	38
Test and Targets	18
Hypersonic & Ballistic Tracking Space Sensor	1
Other Activities (Including Classified)	27

In 2021, MDA procurement funding is focused on three major missile defense components: about 52 percent of the 2021 funds support Aegis system and SM-3 interceptor procurement, about 34 percent supports THAAD procurement, and about 10 percent is for the Iron Dome and Arrow programs for Israel's defense.

The current allocation of MDA budgets - with heavy emphasis on component development and procurement - is consistent with the observation that MDA today is primarily focused on developing, procuring, upgrading, and providing in-service engineering for the major components of the BMDS system-of-systems. While MDA has and continues to conduct science and technology (S&T) (i.e., basic research, applied research, and advanced technology development, also known as Budget Activities (BAs) 1-3), S&T has not constituted a substantial share of its overall program - in 2021, only 1 percent of MDA's budget supports Advanced Technology Development.

### **3. Changes in MDA's external relationships introduced by the Directive-Type Memorandum**

The March 2020 DOD Directive-Type Memorandum (DTM) described earlier established several new management and reporting requirements for MDA, creating new external relationships that are relevant for the placement of MDA within the DOD organizational structure.<sup>43</sup> These include additional coordination in setting MDA requirements. For the first time, MDA must now seek approval from the USD(A&S) beginning at the Technical Development Decision (equivalent of Milestone A under DoD 5000) for any of its programs that satisfy the definition in Title 10 for being major, unless that authority is delegated to the Director, MDA.<sup>44</sup> Specifically, prior to the

<sup>43</sup> Deputy Secretary of Defense Directive Type Memorandum 20-002, "Missile Defense System Policies and Governance," 13 March 2020.

<sup>44</sup> See Title 10 U.S. Code § 2430 - Major defense acquisition program defined.



Product Development Decision (PDD, equivalent of Milestone B under DoD 5000), the DTM requires that

- MDA must establish a hybrid program office in collaboration with the Service that will operate a new missile defense component.
- MDA must develop a transfer agreement and coordinate it with the Secretary of the receiving Military Department.
- MDA must develop a Top-Level Requirements Document (TLRD) in coordination with the Secretary of the Military Department that will operate the system as well as with the Commander of STRATCOM.
- OSD(CAPE) must prepare an ICE and update it prior to the Production Decision (PD, equivalent to the full-rate production decision under DoD 5000).

Prior to the DTM, MDA was not required to seek any external approval for the requirements it developed, although it did consult with the Combatant Commanders through its Warfighter Involvement Process (WIP). MDA was not required to seek external approval for the programs it pursued until the initial production decision (equivalent to low-rate initial production under DoD 5000 for major capabilities), at which point approval by USD(A&S) was required. MDA was not required to establish a hybrid program office until the production decision (although it did so earlier than that), nor were there requirements for an independent cost estimate (ICE) or for a transfer agreement early in a program providing the conditions under which transfer of responsibility for BMDS elements to the Services should occur.

It is important to note that the DTM follows the existing legislative stipulation that USD(A&S) co-chair the MDEB with USD(R&E) for decisions involving acquisition milestones.<sup>45</sup> Thus, the DTM largely shifts acquisition oversight authority to USD(A&S) and away from USD(R&E) as the PSA.

### **C. Potential Parent Organizations**

As noted above, Congress directed the consideration of two specific parent organizations for performing oversight of MDA - USD(R&E) and USD(A&S)—and indicated that other organizations could be considered. IDA's assessment also includes Space Force and USSTRATCOM as examples of a military Service and a COCOM that conduct activities involving—and potentially consistent with overseeing—MDA. To provide context for the assessments of the pros and cons of alternative assignments of MDA oversight responsibilities, this section begins with a brief overview of the key attributes of these organizations relevant to the MDA mission.

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<sup>45</sup> Section 1681 of Public Law 1115-232 and Section 1676 of Public Law 115-91 govern the leadership of the MDEB.

## **1. Key Attributes of the Potential Parent Organizations**

### **a. USD(R&E)**

The USD(R&E) website indicates the organization's mission is "providing science and technology [S&T] leadership throughout the DoD to meet the challenges of today and tomorrow." The Director, MDA, currently reports to USD((R&E), who had, through the summer of 2020, revised and approved MDA's overall and specific program proposals and plans.<sup>46</sup> While its mission statement focuses on S&T, USD(R&E) includes, under the Director for Advanced Capabilities, a Deputy Director for Engineering, and under that Deputy, a Director for Developmental Test, Evaluation, and Assessments (DTE&A).<sup>47</sup> In addition to responsibilities for advising on the developmental testing of major defense programs, the DTE&A office includes systems engineering.<sup>48</sup> Developmental testing and systems engineering—including flowing requirements down to system specifications included in contracts—are key activities in the life cycle of major weapon systems, including many of the programs conducted during the past 18 years by MDA.

### **b. USD(A&S)**

USD(A&S) "provides a defense-wide adaptive acquisition framework from need identification to disposal."<sup>49</sup> As noted earlier, the Deputy Secretary's March 2020 DTM assigns milestone decision authority for MDA major acquisition programs to USD(A&S).<sup>50</sup> These authorities are consistent with those generally assigned to USD(A&S) for major programs, and they could be delegated down to the Director, MDA. As indicated by the organization's mission statement, USD(A&S) oversees decisions across the life cycle of programs, from the earliest stages of program initiation (e.g., Materiel Solutions Analysis (MSA)) to production and sustainment.

### **c. Space Force**

Often in conjunction with MDA, Space Force has responsibility for developing, upgrading, and operating both terrestrial and space-based sensors that play key roles in missile defense. Such sensors include the Space-based Infrared System (SBIRS), Upgraded Early Warning Radars (UEWRs), and Long-Range Discrimination Radar (LRDR). Although MDA has been assigned

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<sup>46</sup> For example, the USD(R&E) provided direction during 2020 regarding MDA's proposals for improving missile defense discrimination as well as regarding requirements, funding, and a schedule for the Next Generation Interceptor program.

<sup>47</sup> The DTE&A Director has Deputies with responsibilities for system types, including air, land, naval, command and control, space, and missile. Thus, the staff in DTE&A are four levels deep in the OUSD(R&E) organization.

<sup>48</sup> See Title 10 U.S. Code § 2430 - Major defense acquisition program defined.

<sup>49</sup> See <https://www.acq.osd.mil/>, accessed December 23, 2020.

<sup>50</sup> For example, USD(A&S) is the decision authority for MDA's product development decision (PDD), the analog of the engineering and manufacturing development or Milestone B decision under DoD's 5000-series of acquisition instructions and directives.

responsibility for developing the sensor to be employed on the Hypersonic and Ballistic Tracking Space Sensor (HBTSS), Space Force will also play a role in the system's development (e.g., the HBTSS bus) and operation. Due to Space Force's significant overlaps with MDA in mission needs and capabilities, IDA considers Space Force to be an example of a Military Service that might serve as a potential parent organization overseeing MDA.

#### **d. USSTRATCOM**

USSTRATCOM currently has important responsibilities for shaping MDA requirements, and as a unifying Command, it could contribute strong mission focus in overseeing MDA. "The mission of USSTRATCOM is to deter strategic attack and employ forces, as directed, to guarantee the security of our Nation and our Allies. The command's assigned responsibilities include strategic deterrence; nuclear operations; space operations; joint electronic spectrum operations; global strike; missile defense; and analysis and targeting."<sup>51</sup> STRATCOM is a member of the MDEB's Operational Forces Standing Committee (OFSC) and has led MDA's Warfighter Involvement Process for reviewing missile defense requirements and program proposals. Under the Deputy Secretary's March 2020 DTM, STRATCOM will perform a Capability and Utility Assessment (CUA) of MDA's program proposals before the Program Development Decision (PDD). MDA must also develop a Top-Level Requirements Document (TLRD) and coordinate it with STRATCOM before PDD. Thus, IDA considers STRATCOM to be an example of a COCOM that might serve as a potential parent organization overseeing MDA.

## **2. Observations on Authorities, Expertise, and Culture**

Given the differing characteristics and capabilities of these potential parent organizations, they offer a variety of strengths and weaknesses in overseeing MDA. Table 2.3 summarizes the IDA study team's observations for each organization for each of the three assessment criteria described earlier: authorities, expertise, and culture.<sup>52</sup> For each organization and criterion, the table identifies the strengths of the organization as well as any gaps or weaknesses in capabilities. As the table shows, none of the parent organizations individually covers the full range of MDA's responsibilities.

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<sup>51</sup> U.S. STRATCOM website at <https://www.stratcom.mil/about/>, accessed December 23, 2020.

<sup>52</sup> The assessment of the relevant authorities, expertise, culture, and incentives of the potential parent organizations is based on the fact-finding interviews conducted for this study, generally available descriptions of the organizations, and the experience of the IDA study team.

**Table 2.3 Capabilities (and Capability Gaps) of the Potential Parent Organizations**

		Authorities	Expertise	Culture & Incentives
USD (R&E)	Capabilities	<ul style="list-style-type: none"> <li>Exercises authority over early program S&amp;T, prototyping, and developmental testing</li> </ul>	<ul style="list-style-type: none"> <li>Leadership and staff have experience with technology and acquisition programs across the Services, including the full range of acquisition activities.</li> <li>Possesses the OSD staff for systems engineering, integration, and developmental testing</li> </ul>	<ul style="list-style-type: none"> <li>Mission perspective is global, multidomain, and cross-Service</li> </ul>
	Gaps	<ul style="list-style-type: none"> <li>No authorities for MDA requirements</li> <li>No authority across the full breadth of development, procurement, and sustainment.</li> </ul>	<ul style="list-style-type: none"> <li>Lacks expertise for system sustainment.</li> </ul>	<ul style="list-style-type: none"> <li>Primary focus is on technology development, not the full range of activities currently conducted by MDA.</li> </ul>
USD (A&S)	Capabilities	<ul style="list-style-type: none"> <li>Has milestone decision authority over full life cycle, including reviewing and approving acquisition strategies, RFPs, and contracts</li> <li>Has authority to direct resources and program changes, including issue resolution across the Services</li> </ul>	<ul style="list-style-type: none"> <li>Leadership and staff have experience with technology and acquisition programs across the Services, including the full range of acquisition activities.</li> <li>Retains some staff who were previously involved in missile defense oversight conducted by OUSD(AT&amp;L)</li> </ul>	<ul style="list-style-type: none"> <li>Mission perspective is global, multidomain, and cross-Service</li> <li>Mission spans development, production, fielding, and sustainment consistent with the current end-to-end, life cycle activities of MDA</li> </ul>
	Gaps	<ul style="list-style-type: none"> <li>No authorities for MDA requirements</li> </ul>	<ul style="list-style-type: none"> <li>Lacks organization responsible for systems engineering, integration, and developmental testing</li> </ul>	

**Table 2.3 -- continued. Capabilities (and Capability Gaps) of the Potential Parent Organizations**

		Authorities	Expertise	Culture & Incentives
Space Force	Capabilities	<ul style="list-style-type: none"> <li>• Has authority to develop and approve Service-unique requirements. (Space RCO requirements are exempt from the JCIDS by law.)</li> <li>• Has full life cycle authorities for developing strategies and plans; overseeing SE&amp;I; resource management and program execution related to the space mission</li> </ul>	<ul style="list-style-type: none"> <li>• Has leadership and staff with in-depth Space system development, acquisition, and operations expertise</li> </ul>	<ul style="list-style-type: none"> <li>• Would bring strong mission priority to space-based (and supporting) systems</li> <li>• Mission perspective is global and multidomain</li> </ul>
	Gaps	<ul style="list-style-type: none"> <li>• Lacks authority to oversee development, procurement, and sustainment of terrestrial-based MDA components</li> <li>• Lacks authority for integrating MDA system-of systems</li> </ul>	<ul style="list-style-type: none"> <li>• Leadership and staff lack expertise with terrestrial MDA components</li> <li>• Leadership and staff lack expertise for integrating MDA system-of-systems</li> </ul>	<ul style="list-style-type: none"> <li>• As a Space-focused Service, a Cross-service perspective would be lacking.</li> <li>• Space Force lacks the breadth of focus on and incentives for addressing the full range of MDA system-of-system capabilities.</li> </ul>
US STRAT-COM	Capabilities	<ul style="list-style-type: none"> <li>• Has several roles in the MDA requirements process:                             <ul style="list-style-type: none"> <li>○ Chairs the Warfighter Involvement Process for MDA requirements</li> <li>○ Responsible for the Capability and Utility Assessment (CUA) of MDA's program proposals</li> <li>○ Coordinates with MDA and Services on MDA Top-Level Requirements Documents (TLRD)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Has leadership and staff with MDA mission focus and operational expertise</li> </ul>	<ul style="list-style-type: none"> <li>• Mission perspective is global, multidomain, and cross-Service</li> <li>• MDA is a Command mission priority; would bring strong operational focus to MDA priorities and requirements.</li> </ul>
	Gaps	<ul style="list-style-type: none"> <li>• Lacks necessary authorities for acquisition, contracting, and resource management</li> <li>• Lacks authorization for an organization and staff to address acquisition, contracting, and resource management</li> </ul>	<ul style="list-style-type: none"> <li>• Lacks necessary leadership and staff experience and expertise for acquisition, contracting, and resource management</li> </ul>	<ul style="list-style-type: none"> <li>• As a warfighting command, lacks the institutional culture for management, including acquisition, contracting, and resources management</li> </ul>

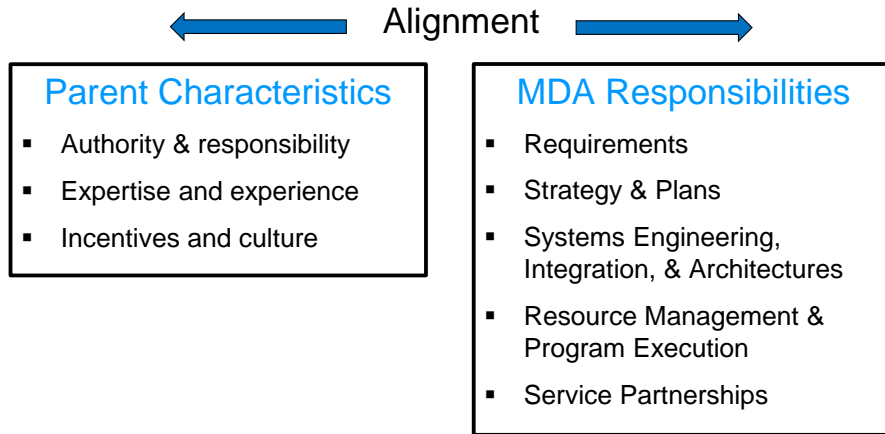
This overview suggests four general themes regarding the capabilities of the potential parent organizations.

- First, subsequent to the division of the responsibilities and authorities of USD(AT&L) into USD(R&E) and USD(A&S), neither has all of the authorities or expertise needed to oversee the full range of MDA responsibilities over the life cycle of MDA component programs. USD (R&E) authorities and expertise are focused on front-end S&T, system engineering and integration, developmental testing, and prototyping. R&E lacks the authorities and expertise to oversee acquisition and sustainment programs or to integrate across the MDA system-of-system capabilities. USD(A&S) exercises milestone decision authority across the life cycle of weapon programs, and while USD(A&S) has a broad acquisition life cycle perspective, its expertise is mainly focused on the later phases of acquisition and program sustainment. A primary shortcoming is that SE&I capabilities are located in USD(R&E). Regardless of which organization is assigned lead responsibility for MDA, it will be necessary for both A&S and R&E to continue to support one another in their respective areas of expertise.
- Second, given the current division of responsibilities between USD(R&E) and USD(A&S), the authorities, expertise, and culture of USD(A&S) most closely aligns with MDA responsibilities, which involve substantial development, procurement, and sustainment efforts.
- Third, once fully established, Space Force will possess the expertise, authorities, and cultural alignment needed to oversee the life cycle of the space systems within its purview, which will have substantial complementarities with MDA's space-related capabilities. However, Space Force lacks the authority, expertise, and breadth of perspective needed to oversee the Services' terrestrial-based programs or to lead the integration of the full span of the missile defense system-of-systems components.
- Fourth, USSTRATCOM currently has important responsibilities for shaping MDA requirements, and as a unifying Command, it could contribute strong mission focus in overseeing MDA. However, executing full oversight responsibility for MDA would require a major transformation of USSTRATCOM. This would include substantial legislative action to assign the necessary acquisition and resourcing authorities as well as a staff retooling to build the range of the expertise needed to oversee MDA.

#### **D. Alignment of Potential Parent Organizations with MDA's Mission**

The final step in the assessment examines the alignment of the characteristics and capabilities of the potential parent organizations with MDA's mission responsibilities. As discussed earlier in the methodology section, IDA identified the three characteristics that are essential for a parent organization to conduct effective oversight: authorities, expertise, and culture. For each potential

parent, IDA assessed the alignment of these characteristics with MDA’s responsibilities (see Figure 2.4).



**Figure 2.4 Assessment of Alignment**

IDA’s assessment of the alignment of the parent organization’s characteristics and capabilities with MDA mission responsibilities is summarized in Table 2.4. The three parent characteristics listed on the left-hand side of Figure 2.4 form the row headings in the assessment table. The five responsibilities listed on the right-hand side of Figure 2.4 form the column headings in the table.

To document the IDA study team’s analysis, the details of the assessments are presented in Tables 2.5a through 2.5d. Each table examines one of the potential parent organizations in depth. The entries in the tables assess the alignment of the parent organizations’ capabilities with MDA’s areas of responsibility. For the first two categories of parent capabilities (authorities and expertise), individual assessments are provided for each of MDA’s five areas of responsibility. For the parent capabilities relating to incentives and culture, a single overall assessment of alignment is provided. Hence each table includes a total of 11 assessments. Section E of this chapter provides summary observations based on these assessments.

**Table 2.4 Alignment of Potential Parents**

	Requirements	Strategies and Plans	Systems Engineering and Integration	Resource Management/Program Execution	Cross-Service Acquisition Partnerships
<b>OUSD(R&amp;E)</b>					
<i>Responsibilities and authorities consistent with mission</i>	No authorities but could raise issues	S&T/prototyping focus; lacks directive authorities	Has SE&I staff element but lacks directive authorities	S&T/prototyping focus; lacks directive authorities	S&T/prototyping focus; can raise cross-service issues but lacks directive authority
<i>Leadership and staff with requisite expertise and experience</i>	Has systems engineering staff element that can oversee requirements flow down; organizational focus appears to be S&T	Primary focus appears to be on S&T/prototyping not full breadth of MDA activities	Effective systems engineering is key to success; has staff element four levels deep in the organization	Primary focus appears to be on S&T/prototyping not full breadth of MDA activities; contracts reviewed in A&S	Has cross-service experience
<i>Incentives and culture consistent with objective assessment</i>	Staff have acted both as proponents and objective assessors				
<b>OUSD(A&amp;S)</b>					
<i>Responsibilities and authorities consistent with mission</i>	No authorities but could raise issues	Authorities span current set of MDA activities	Lacks SE&I staff element; would need to work with R&E	Authorities span current set of MDA activities	Can direct issue resolution within and across the Services
<i>Leadership and staff with requisite expertise and experience</i>	Extent to which staff with expertise in requirements flow-down exist is unclear	Expertise spans current set of MDA activities	Extent to which systems engineering and developmental testing expertise exist is unclear; both are key to effective execution	With the exception of developmental testing, has expertise in development, production, sustainment, and contracting, which are key to successful execution	Has cross-service experience
<i>Incentives and culture consistent with objective assessment</i>	Staff have acted both as proponents and objective assessors				
<b>Space Force</b>					
<i>Responsibilities and authorities consistent with mission</i>	Has requisite authorities for space systems; lacks authorities spanning full range of MDA activities				
<i>Leadership and staff with requisite expertise and experience</i>	Has requisite expertise for space systems; lacks expertise spanning full range of MDA activities (e.g., interceptors)				
<i>Incentives and culture consistent with objective assessment</i>	Focus likely to be Service-oriented proponent, although some staff elements may have mandates consistent with objective oversight/assessment				
<b>STRATCOM</b>					
<i>Responsibilities and authorities consistent with mission</i>	Has authority to develop command-specific requirements and provide them to other organizations for their consideration.	Lacks acquisition authorities. Would need to be provided those authorities in law.			
<i>Leadership and staff with requisite expertise and experience</i>	Has expertise to develop command-specific requirements. Coordination with regional COCOMs needed for theater missile defense.	Lacks acquisition expertise. Would need to develop expertise overseeing major programs and hire requisite staff.			Has expertise in operations. Would need to develop expertise overseeing major cross-service acquisition programs and hire requisite staff.
<i>Incentives and culture consistent with objective assessment</i>	Focus likely to be command-oriented proponent, although some staff elements may have mandates consistent with objective oversight/assessment.				



**Table 2.5a. OUSD(R&E) as Parent**

Responsibilities and authorities	
Requirements	R&E has no authorities regarding requirements. Nonetheless, OUSD(R&E) could raise requirements-related issues at the JROC and/or to the Secretary and Deputy Secretary.
Strat, plans, architectures	R&E's focus appears to be on planning and developing strategies for S&T/prototyping, not the full range of activities currently conducted by MDA. OUSD(R&E) also lacks directive authority.
SE&I; Dev. Test	Although R&E lacks directive authorities, DTE&A, including systems engineering, sits within the organization. R&E could identify issues related to systems engineering and integration (SE&I) and work with OUSD(A&S), which has decision authority, to resolve such issues.
Resource mgmt. & program execution	Primary focus appears to be on S&T/prototyping rather than on the entire acquisition life cycle of activities MDA conducts. OUSD(R&E) lacks directive authority. Larger contracts are reviewed by OUSD(A&S) in its office of Defense Pricing and Contracting (DPC).
Cross-Service Partnerships	Primary focus appears to be on S&T/prototyping, not the entire acquisition life cycle. Nonetheless, R&E does by necessity work across the Services and is positioned to do so. R&E lacks directive authority but could work with A&S and/or raise issues for resolution to the Secretary/Deputy Secretary.
Leadership and Staff Expertise	
Requirements	R&E's primary focus appears to be on S&T/prototyping, not the entire acquisition life cycle. Nonetheless, DTE&A, including systems engineering, is within OUSD(R&E). Systems engineering involves flowing requirements down to system technical performance specifications, which is key to effective execution of programs.
Strat, plans, architectures	MDA plans and develops strategies for conducting activities across the full breadth of acquisition, not just S&T, which is the R&E's focus.
SE&I; Dev. Test	DTE&A, including systems engineering, is part of OUSD(R&E). Rigorous systems engineering is key to integration and fielding an effective system. However, systems engineering staff is four levels deep in the R&E organization, constraining its ability to raise issues to leadership or outside OUSD(R&E).
Resource mgmt. & program execution	R&E's focus is on S&T/prototyping, not on EMD, production, fielding, and sustainment. The latter are the focus of MDA. Nonetheless, developmental testing and systems engineering, which are part of OUSD(R&E), are key to assuring programs can execute successfully and deliver effective capabilities. However, both systems engineering and developmental testing staffs are four levels deep in the organization, constraining their ability to raise issues. OUSD(R&E) also lacks directive authority.
Cross-Service Partnerships	R&E's leadership and staff have experience with programs across the Services and the full range of acquisition activities. Nonetheless, R&E's focus appears to be on S&T and prototyping, not the full breadth of acquisition.
Incentives and culture	
	R&E's leadership and staff are drawn mostly from former OUSD(AT&L), Service acquisition organizations, and defense contractors. When such staff members have functioned as program proponents, conflicting incentives create concerns about the performance of their independent oversight responsibilities, which requires the identification and correction of program problems. Nonetheless, staff have raised issues and functioned objectively.

**Table 2.5b. OUSD(A&S) as Parent**

Responsibilities and authorities	
Requirements	A&S has no authorities regarding requirements. Nonetheless, OUSD(A&S) could raise requirements-related issues at the JROC and/or to the Secretary and Deputy Secretary.
Strat, plans, architectures	Authorities span development, production, and sustainment consistent with planning and developing strategies for the current set of activities conducted by MDA.
SE&I; Dev. Test	Systems engineering is within OUSD(R&E), not OUSD(A&S). Rigorous systems engineering is key to integration and fielding effective systems. Nonetheless, via consultation with R&E, could identify SE&I-related issues and has decision authority under the March 2020 DTM. However, very contentious issues could still be raised to the Secretary and Deputy Secretary for resolution.
Resource mgmt. & program execution	A&S authorities span development, production, fielding, and sustainment consistent with the current span of activities conducted by MDA. A&S has authority to review and approve acquisition strategies, RFPs, and contracts which are all key to effective and timely program execution. A&S also has authority to direct program changes. However, very contentious issues could still be raised to the Secretary and Deputy Secretary for resolution.
Cross-Service Partnerships	OUSD(A&S) has authority to direct the resolution of issues within and across the Services. Nonetheless, very contentious issues could still be raised to the Secretary/Deputy Secretary for resolution
Leadership and Staff Expertise	
Requirements	Extent to which staff with expertise in requirements flow-down to requirements exist is unclear, given that systems engineering resides with OUSD(R&E). The organization does, however, have some staff that were previously involved in missile defense oversight conducted by OUSD(AT&L).
Strat, plans, architectures	With the exception of S&T, which has not been a substantial effort for MDA, A&S has leadership and staff with expertise in planning and developing strategies across the full range of current MDA activities.
SE&I; Dev. Test	Extent to which systems engineering and developmental testing expertise exist within A&S is unclear. There are no explicit elements of the organization with those responsibilities. The organization does, however, have some staff that were previously involved in missile defense oversight conducted by OUSD(AT&L).
Resource mgmt. & program execution	With the exception of developmental testing and systems engineering, A&S staff have expertise in development, production, and contracting, which are key to structuring programs that can execute successfully and deliver effective capabilities.
Cross-Service Partnerships	Leadership and staff have experience with programs across the Services.
Incentives and culture	
	A&S has staff drawn from the former OUSD(AT&L), Service acquisition organizations, and defense contractors. When such staff members have functioned as program proponents, conflicting incentives create concerns about the performance of their independent oversight responsibilities, which requires the identification and correction of program problems. Nonetheless, A&S staff members have raised issues and functioned objectively.

**Table 2.5c. Space Force as Parent**

Responsibilities and authorities	
Requirements	Space Force has authority to develop and approve Service-unique requirements. Requirements with Joint interest could be subject to the Joint Capabilities Integration and Development System (JCIDS) depending upon the details (e.g., Space Rapid Capabilities Office requirements are exempt from the JCIDS by law). The Service does not have the authority to develop and approve requirements across the full range of capabilities (e.g., terrestrial interceptors) for which MDA is currently responsible.
Strat, plans, architectures	Space Force has requisite authorities for developing strategies and plans related to space systems, including sensors, both terrestrially and spaced-based. Although such sensors are and will continue to be key to MDA's activities, Space Force lacks authorities covering all aspects of terrestrial interceptors currently pursued by MDA.
SE&I; Dev. Test	Has requisite authorities for overseeing SE&I related to space systems. Although the sensors for which the Service is responsible are and will continue to be key to MDA's activities, the Service lacks requisite authorities covering all aspects of terrestrial interceptors.
Resource mgmt. & program execution	Space Force has requisite authorities for overseeing resource management and program execution of space-related systems and their associated Service-unique missions. Although such systems are and will continue to be key to MDA's activities, Space Force lacks requisite authorities covering all aspects of terrestrial interceptors. The Service would be likely to accord highest priority to providing resources needed to execute programs associated with its core missions.
Cross-Service Partnerships	Lacks authorities to oversee or direct resolution of issues associated with programs other than those executed by Space Force.
Leadership and Staff Expertise	
Requirements	Space Force has leadership and staff with expertise to develop Service-unique requirements. Lacks expertise covering the full range of capabilities (e.g., terrestrial interceptors) for which MDA is currently responsible.
Strat, plans, architectures	Has leadership and staff with expertise to develop Service-unique strategies and plans. Lacks expertise covering the full range of capabilities (e.g., terrestrial interceptors) for which MDA is currently responsible
SE&I; Dev. Test	The Service has leadership and staff with expertise needed to oversee SE&I related to space systems. Although such systems are and will continue to be key to MDA's activities, Space Force lacks expertise covering all aspects of the activities MDA undertakes.
Resource mgmt. & program execution	Has leadership and staff with expertise needed to oversee/perform resource management and program execution related to space systems. Although the systems for which Space Force is responsible are and will continue to be key to MDA's activities, it lacks expertise covering all aspects of MDA's activities (e.g., terrestrial interceptors).
Cross-Service Partnerships	Although some leadership and staff in the Space Force have cross-service expertise, focus is predominantly Service-unique.
Incentives and culture	
	Its focus is likely to be that of a Service-oriented proponent, although some staff elements may have mandates consistent with broader objective oversight/assessment.

**Table 2.5d. USSTRATCOM as Parent**

Responsibilities and authorities	
Requirements	Has authority to develop command-specific requirements and provide them to the Joint Staff and Services for their consideration. Joint Staff and Services would have approval authority unless otherwise prescribed in law. Responsibilities would cover most missile defense activities conducted either by MDA or the Services. Coordination with regional COCOMs would be needed for theater missile defense.
Strat, plans, architectures	In all other areas of assessment, the Command lacks authorities and would need to be provided to them in law.
SE&I; Dev. Test	
Resource mgmt. & program execution	
Cross-Service Partnerships	
Leadership and Staff Expertise	
Requirements	Has expertise to develop command-specific requirements. Expertise would cover most missile defense activities. But, coordination with regional COCOMs would be needed for theater missile defense.
Strat, plans, architectures	In all other areas of assessment, STRATCOM lacks acquisition expertise. It would need to develop the expertise to oversee major weapon programs and hire requisite staff.
SE&I; Dev. Test	
Resource mgmt. & program execution	
Cross-Service Partnerships	
Incentives and culture	
	Its focus is likely to be that of a Command-oriented proponent, although some staff elements may have mandates consistent with broader objective oversight/assessment.

## **E. Organizational Assessment Observations**

To recap, the organizational analysis examines the strengths and weaknesses of four potential parent organizations for overseeing MDA: USD(R&E), USD(A&S), the Space Force (as an example of a Service), and USSTRATCOM (as an example of a COCOM). For each of these potential parent organizations, the study team documented the organization's current authorities, leadership and staff expertise, and its culture and incentives relevant to missile defense. We then assessed the alignment of these parental capabilities against MDA's five major responsibilities for BMDS: requirements, strategy and plans, systems integration and architectures, program and resource management, and cross-Service partnerships.

Some common themes emerged across the cases examined, and the following observations sum up the principal findings:

- USD(A&S) is most closely aligned with MDA's program and responsibilities, which focus heavily on developing, procuring, and sustaining engineering for the integrated BMD systems-of-systems.
  - USD(A&S) has milestone approval authority for all major MDA programs, whether under MDA or a Service.
  - USD(A&S) has some of the staff that formerly oversaw MDA acquisition programs when MDA was in the USD(AT&L) organization.
  - Note that the OSD staff responsible for systems engineering, integration, and developmental testing reside in OUSD(R&E).
- USD(R&E) would most closely align with MDA if MDA's mission were focused on S&T development. However, given MDA's programmatic emphasis on the development, integration, acquisition, and sustainment of system-of-systems components, USD(R&E) authorities, expertise, and culture are not closely aligned with MDA's responsibilities.
- Space Force's authorities, expertise, and culture would closely align with MDA if MDA's mission were heavily focused on developing, procuring and operating space-based sensors and C2BMC. However, Space Force lacks the breadth of authorities, expertise, and culture to oversee other Service acquisition and sustainment programs and to lead the integration of the full range of system-of-system components.
- USSTRATCOM has mission responsibility for missile defense and has responsibilities for setting MDA requirements. As a parent organization, USSTRATCOM would be expected to strengthen the influence of the COCOMs and Services in establishing MDA priorities and requirements. However, USSTRATCOM is currently not structured or staffed to assume broader oversight and integration responsibilities.

In sum, USD(A&S) is most closely aligned with MDA's mission and responsibilities, which are principally focused on developing, integrating, procuring, and sustaining the major BMD system-of-system components. And USD(A&S) would remain most closely aligned with MDA's responsibilities if the preponderance of MDA's effort involved developing and procuring hardware—even if steps were taken to transfer a greater share of responsibilities for procurement and sustainment to the Services.

### 3. Acquisition Assessment

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IDA was asked to consider the question of whether MDA should transition to the standard DoD Instruction (DoD) 5000 acquisition process and to identify both the risks and benefits of making such a transition. The main goals of an acquisition process are to meet cost, schedule, and performance objectives with appropriate oversight and accountability.

#### A. Background

When MDA was originally organized, its priorities included fielding a Ballistic Missile Defense System (BMDS) as soon as practicable. Elements of the BMDS were supposed to enter the formal DoD acquisition cycle at Milestone C, at which point the Services would take over procurement and operation. BMDS was not subject to the traditional military requirements generation process.<sup>53</sup> MDA's alternative acquisition and requirements processes have evolved over the years; for example,

- In 2005 USSTRATCOM and MDA created the Warfighter Involvement Process (WIP) to address Combatant Command (COCOM) needs.<sup>54</sup>
- In 2011 Congress required MDA to establish and maintain an acquisition baseline for each BMDS element.<sup>55</sup>
- In 2020 the Deputy Secretary of Defense (DepSecDef) issued a Directive Type Memorandum (DTM) changing the milestone decision authority and reporting for major missile defense programs.<sup>56</sup>

The Government Accountability Office (GAO), which has prepared annual assessments of MDA's progress toward achieving its acquisition goals and objectives, reports that "MDA has developed, demonstrated, and fielded a limited homeland and regional ballistic missile defense capability, but MDA has fallen short of its goals, in part, because of high-risk acquisition practices."<sup>57</sup>

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<sup>53</sup> SECDEF memo, Missile Defense Program Direction, 2 January 2002.

<sup>54</sup> GAO-08-740 *Ballistic Missile Defense: Actions Needed to Improve Process for Identifying and Addressing Combatant Command Priorities* July 31, 2008.

<sup>55</sup> 10 U.S. Code § 225 - Acquisition accountability reports on the ballistic missile defense system

<sup>56</sup> Directive Type Memorandum 20-002 "Missile Defense System Policies and Governance," DEPSECDEF, 13 March 2020.

<sup>57</sup> GAO-20-490T *Missile Defense Lessons Learned From Acquisition Efforts*, Testimony Before the Subcommittee on Strategic Forces, Committee on Armed Services, House of Representatives, 12 March 2020.

The DoD 5000 series of documents has been in place since the early 1970s. It was intended to address what then-DEPSECDEF Packard thought were the three problems of DoD acquisition programs: (1) systems that were overly complex, (2) concurrency caused by moving systems into production before resolving development problems, and (3) poor management practices that included the inability to hold any one person accountable for critical decisions due to frequent and poorly timed personnel rotations.<sup>58</sup> There have been many changes over the years and at least six rounds of major acquisition reforms, including the most recent reforms advocated principally by the late Senator John McCain. Previous attempts at reform have met with varying degrees of success.<sup>59</sup>

The GAO, in its most recent annual assessment of defense acquisitions which examined 85 major defense acquisition programs (MDAPs)<sup>60</sup> between 2018–2019, found that “MDAPs’ cost and schedule performance is less encouraging as measured against their original approved program baselines. MDAPs have accumulated over \$628 billion (or 54 percent) in total cost growth since program start, most of which is unrelated to the increase in quantities purchased. Additionally, over the same period, time required to deliver initial capabilities has increased by 30 percent, resulting in an average delay of more than two years. Many MDAPs continue to move forward without the benefit of knowledge at key acquisition points. GAO has found a correlation between implementation of certain practices and improved cost and schedule performance.”<sup>61</sup> Thus, DoD’s use of the DoD 5000 series of regulations has not assured satisfactory acquisition outcomes.

Recent changes to MDA’s acquisition process were brought about by the DEPSECDEF’s DTM issued in March 2020, and changes in the DoD 5000 Adaptive Acquisition Framework (AAF) for Major Capability Acquisition took effect August 2020. Both the DoD 5000 AAF and MDA under the DTM are new enough that little actual experience exists in the Department with using either process. The study team will note the written differences and examine the risks and benefits of transitioning MDA to DoD 5000.

## **B. Methodology**

This section describes the methods IDA used to assess transitioning MDA to the standard DoD 5000 acquisition process by examining the risks and benefits of transition. IDA needed insight and understanding into three major areas: how the acquisition process is currently working at MDA, how the acquisition process works under DoD 5000, and what other acquisition processes are used around DoD that might serve as suitable models. To illustrate the risks and benefits, IDA surveyed numerous stakeholders and literature for informed opinions.

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<sup>58</sup> Brian M. Fredrickson, *The Laird-Packard Way: Unpacking Defense Acquisition Policy*, Wright Flyer Papers #74, Air University, March 2020.

<sup>59</sup> Peter Levine, *Lessons from the Never-Ending Search for Acquisition Reform*, IDA NS-P8951, May 2018.

<sup>60</sup> See Title 10 U.S. Code § 2430 - Major defense acquisition program defined.

<sup>61</sup> GAO-20-439, *Defense Acquisitions Annual Assessment*, June 2020.



The study team worked along four lines of effort:

- Understanding the MDA process
- Understanding DoD 5000
- Surveying and understanding other DoD acquisition processes
- Integrating and assessing the results.

### **1. Understanding the MDA acquisition process**

The study team needed to understand the current MDA process including requirements, decision points, and authorities. We spoke with personnel at MDA, former MDA officials, and others to learn the reasoning why MDA was originally stood up as well as how its process has evolved. We also reviewed prior studies of MDA and its acquisition process. The IDA team noted in the literature and interviews where others have commented on the relative strengths and drawbacks of this process. We also examined relevant documentation including United States Code, memorandums, DoD directives, congressional testimony, and other documents including many provided by MDA (e.g., MDA's internal acquisition and requirements directives). Interviews with other DoD officials and congressional staffers provided insight into the motivations behind changes to MDA's process as well as oversight issues. COCOM representatives provided input on MDA's ability to meet warfighting requirements.

### **2. Understanding DoD 5000**

As in the first line of effort, the study team needed to understand the current DoD 5000 process including requirements, decision points, and authorities. We spoke with acquisition officials in DoD and the Services to understand the reasoning behind the most recent changes and how they are being put into practice. The team also noted where others have commented on the relative strengths and drawbacks of the current DoD 5000 process. We examined relevant documentation including U.S. Code, memorandums, directives, congressional testimony, and other reports.

For major capabilities acquisition, DoD 5000 explicitly references requirements documentation generated using the Joint Capabilities Integration and Development System (JCIDS). JCIDS is a separate process under the Joint Staff. We asked nearly all interviewees to provide their thoughts on the requirements process.

### **3. Surveying and understanding other DoD processes and programs.**

The study team identified acquisition processes developed by DoD organizations to rapidly prototype or field capabilities. Many of these organizations, like the Army Rapid Capabilities and Critical Technologies Office and USMC Rapid Capabilities Office, are fairly new. The team

conducted interviews with OSD and Service acquisition officials to gain their perspectives on these alternate paths.

#### **4. Integrating the results**

The study team compared the important features of reporting and oversight that would change if MDA were transitioned to DoD 5000. We also compared how the MDA process changed before and after the DTM. The key aspects of oversight examined include but were not limited to

- Requirements Generation and Approval
- Contract Technical Specifications Generation and Approval
- Request for Proposal (RFP) Generation and Approval
- Contract Award Determinations
- Acquisition Milestone Review and Approval
- Technical Maturity Assessments
- Cost Estimates
- Program/Budget Planning and Approval.

The study team also considered the following:

- Pros and cons of each acquisition approach from literature surveys, interviews and experiences of example programs
- The implications of MDA transitioning to DoD 5000. Could it be transitioned into existing pathways (directly or with just a few waivers)? What would MDA do differently?
- The implications of transitioning MDA to JCIDS. While not specifically directed by the Congressional language, it is closely related to the question of transitioning to DoD 5000 for major capability acquisitions.

Finally, the study team considered what acquisition oversight might be like for MDA if it is transitioned to DoD 5000 and placed somewhere else in the DoD hierarchy to tie this effort with the Organizational Assessment (described in Chapter 2).

### **C. Initial Considerations**

Before describing the acquisition processes and comparing them, there are some initial considerations.

- Challenges included
  - A lack of data suitable for drawing objective comparisons between acquisition systems

- Both the MDA DTM and DoD 5000 AAF are new and composed mostly of written language with little practice to evaluate. Furthermore, DoD 5000 (through the AAF) and the MDA DTM process (through increased oversight and reporting requirements) have moved closer to each other on paper.
- The tailorability of the AAF and the potential to delegate decision authorities means that acquisition under DoD 5000 could vary widely, so in theory there could be large or small differences between the processes being compared for any given program.
- Multiple interviewees asked “what problem is this (transitioning MDA to DoD 5000) trying to address?” We did not discover a definitive answer to this question. If this question had a definitive answer, the risks and benefits of transition could be framed better.
- Process is one element of acquisition; process improvements specific to acquisition can help, but other factors are important.
  - Some of these factors include capability requirements; budgeting, contracting, workforce expertise, and experience; and the willingness to accept operational capabilities incrementally.
- Although JCIDS is the primary system used by the Joint Requirements Oversight Council (JROC) to oversee development and approval of requirements, it is not the only way for the JROC to review joint military capabilities. MDA could still seek JROC approval through other pathways that can be quicker than going through JCIDS.
- Any acquisition process can produce good and bad outcomes. There are examples of success and failure no matter which process is used. Particular examples do not necessarily provide generally applicable illustrations of risks and benefits. There have also been cases in which oversight processes provided problem information to leadership upon which it did not act.

## **D. Description of the Acquisition Processes**

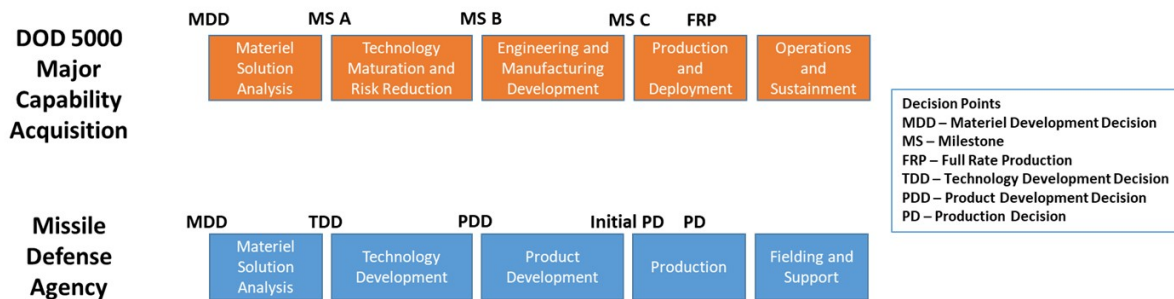
This section describes three acquisition processes: the Missile Defense Agency prior to the DTM, the Missile Defense Agency under the DTM, and DoD 5000 for Major Capability Acquisition. One of the reasons to describe the pre-DTM MDA process is to illustrate the DTM changes that are now in place but did not apply to MDA programs initiated before March 2020. The DoD 5000 Adaptive Acquisition Framework (AAF) includes five other pathways: Urgent Capability Acquisition (less than two years), the Middle Tier of Acquisition (MTA) described in a later section, Software Acquisition, Defense Business Systems, and Acquisition of Services. We focus here on major capability acquisition.

## 1. Missile Defense Agency prior to DTM

The DTM was signed in March 2020.<sup>62</sup> MDA programs initiated prior to the DTM were conducted according to DoD 5134.09 (Missile Defense Agency (MDA)), and the Ballistic Missile Defense System (BMDS) Life Cycle Management Process (LCMP). DoD 5134.09 cites the Under Secretary of Defense for Acquisition, Technology, and Logistics (AT&L) as the entity in the Office of the Secretary of Defense (OSD) through which MDA reports.<sup>63</sup> This report reflects the current situation in which MDA reports through the USD for Research and Engineering (USD(R&E)).

The Director, Missile Defense Agency (MDA) was the Acquisition Executive (AE) for all aspects of the Ballistic Missile Defense System (BMDS), including all RDT&E and procurement activities associated with the BMDS. The Director’s decisions (and other actions) were subject to oversight/review/approval by the USD(R&E) and were in principle subject to discussion/comment among/by the principals of the Missile Defense Executive Board (MDEB) chaired by USD(R&E).

- The Director determined the review process used within MDA for making acquisition decisions. The five milestones used by MDA for its acquisition reviews (which remain current) each have analogs to the milestones currently specified in DoD 5000 for major capability acquisition conducted within the Agile Acquisition Framework (AAF) (see Figure 3.1). The MDA Director was the decision authority prior to the initial Production Decision (PD), with the USD(A&S) being the decision authority thereafter.



**Figure 3.1 Milestones and Phases of DoD 5000 and MDA Acquisition Processes**

- The Director determined the documentation requirements for the review process. The list of required documents has many analogs to the documentation required by the DoD 5000 series, including in particular its most current revisions.<sup>64</sup> The generation, review, and approval of those documents was conducted largely within MDA with a few

<sup>62</sup> Deputy Secretary of Defense Directive Type Memorandum 20-002, “Missile Defense System Policies and Governance,” 13 March 2020.

<sup>63</sup> Missile Defense Agency (MDA), “DoD Directive 5134.09,” 17 September 2009.

<sup>64</sup> MDA 5013.02-INS, *Acquisition Management*, 24 August 2013, under revision.

exceptions (see Table 3.1). All documents could be reviewed by the MDEB, with comments provided for consideration by the MDA Director and USD(R&E). The USD(R&E) could also direct changes to the documentation. CAPE indicated that prior to a Production Decision (PD) for major<sup>65</sup> or other “special interest” programs, an Independent Technical Risk Assessment (ITRA) by USD(R&E), Acquisition Strategy approval by USD(A&S) (since 2017), and an Independent Cost Estimate (ICE) by CAPE were all required.<sup>66</sup> USD(A&S) indicated that both Production Decisions (initial and full) required the same documentation.<sup>67</sup>

- Contracts, including contract specifications, requests for proposals (RFPs), evaluations of responses to RFPs, and contract awards were all prepared and/or conducted by MDA under the Director’s control. Defense Pricing and Contracting (DPC) in OUSD(A&S) reviewed larger dollar value contracts. The Services were necessarily involved in and consulted regarding the content of these products and associated decisions, especially in cases where ongoing Service programs were affected, such as the Upgraded Early Warning Radars (UEWRs), Standard Missile (SM)-3 (all blocks), and the Theater High Altitude Area Defense (THAAD) Systems. That involvement and consultation is largely determined by the Director, MDA. MDA has established hybrid program offices staffed, and in some cases led, by both Service and MDA personnel to execute its programs.
- Incremental improvements in BMDS capabilities (i.e., performance requirements) were developed and defined within MDA and approved by the Director and serve as part of the basis for program planning/budgeting. How these improvements are defined/specified (e.g., as improvements in ground-based interceptor probability of kill) is determined by the Director. The Joint Requirements Oversight Council (JROC) has occasionally been made aware of these capability improvements, has been consulted regarding them, and even issued JROC memorandums, but this has not been a standard practice. The Combatant Commands (COCOMs) develop a Prioritized Capabilities List (PCL) to which MDA responds by developing an Achievable Capabilities List (ACL) consistent, at least in theory, with the incremental improvements in BMDS capabilities the agency is pursuing. STRATCOM used the Warfighter Involvement Process (WIP) and the Operational Forces Standing Committee of the MDEB to generate the PCL. The ACL typically lagged the PCL by one or two years. A Capabilities Development Document (CDD) has been required for programs that transfer to the services.

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<sup>65</sup> See Title 10 U.S. Code § 2430 - Major defense acquisition program defined.

<sup>66</sup> HASC/SASC RFI response for DTM changes. Note that this was not indicated in any formal documentation the study team received. CAPE also noted that it declined MDA’s request to perform an ICE for the Long Range Discrimination Radar (LRDR) in October 2017.

<sup>67</sup> Email correspondence with USD(A&S), 22 Jan 2021.

**Table 3.1 Oversight Comparison**

	Pre-March 2020 Oversight	Current Oversight—Deputy Secretary March 2020 Directive-Type Memorandum for Major/Special Interest Programs	DODI 5000.85 and CJCSI 5123.01H Oversight
<b>Requirements Generation and Approval</b>	Consulting with the Services and Combatant Commands, MDA generates system technical objectives and goals for blocks of incremental capabilities; Director approves; USD(R&E) reviews/approves (potentially with advice from the Missile Defense Executive Board (MDEB)); Operational requirements (i.e., a formal CDD) generated by Services upon transition of capabilities to them. Among these are an Achievable Capabilities List (ACL) responding to the Prioritized Capabilities List (PCL) generated by the Combatant Command (COCOMs)	Capability and Utility Assessment (CUA) conducted by STRATCOM supported by MDA before PDD and PD; Top-Level Requirements Document (TLRD) prepared by MDA before PDD in coordination with the lead Military Dept., STRATCOM, and the appropriate Combatant Commanders.	Initial Capabilities Document (ICD) and Capabilities Development Document (CDD) incorporating KPPs and KSAs. Both prepared by a Military Service presumably with the support of MDA, approved by the Oversight Authority (OA) and Military Service, and formally validated/approved by the Joint Requirements Oversight Council (JROC) using the Joint Capabilities Integration and Development System (JCIDS) process. Presumably, OA would review/approve. Input from the COCOMs would be obtained using the existing process for development of Integrated Priorities Lists (IPLs) for review and endorsement by the JROC and consideration by the Secretary and Deputy Secretary.
<b>Capability and Utility Assessment (CUA)</b>	Not Required. However, MDA generates an Achievable Capabilities List (ACL) using the Prioritized Capabilities List (PCL) generated by the Warfighter Involvement Process (WIP) led by STRATCOM. MDEB Operational Forces Standing Committee (OFSC) participates and full MDEB could review.	Conducted by STRATCOM before Product Development Decision (PDD) and Production Decision (PD); supported by MDA.	Not Required.
<b>Top-Level Requirements Document (TLRD)</b>	Not Required. However, MDA generates an ACL using the results of the WIP led by STRATCOM.	Prepared by MDA in coordination with Secretary of appropriate Military Department, STRATCOM, and the Combatant Commanders before PDD. Presumably reviewed and approved by the OA with advice from the OFSC and MDEB.	Not Required.
<b>Transfer Agreement</b>	Not Required. However, MDA Director develops transition and transfer plans in conjunction with the Secretaries of the Military Departments for BMDS elements transferring in or out of MDA responsibility, whenever that occurs. USD(R&E) reviews/approves (potentially with advice from the MDEB).	Prepared by MDA before PDD providing criteria for transferring responsibilities to a Military Service in conjunction with the Service Secretary. Presumably reviewed and approved by the OA with advice from the MDEB.	Not Required; Military Service presumably involved from the outset.

	Pre-March 2020 Oversight	Current Oversight—Deputy Secretary March 2020 Directive-Type Memorandum for Major/Special Interest Programs	DODI 5000.85 and CJCSI 5123.01H Oversight
<b>Initial Capabilities Document (ICD)</b>	Not Required. However, MDA generates an ACL using the results of the WIP led by STRATCOM.	Not Required.	Prepared by Military Service before Materiel Development Decision (MDD) presumably with support from MDA; presumably reviewed and approved by OA; approved by JROC.
<b>Capabilities Development Document (CDD)</b>	Prepared by the receiving Military Service consistent with JCIDS procedures prior to transfer of a BMDS capability.	Not Required.	Prepared by Military Service presumably with support from MDA; presumably reviewed and approved by OA; approved by JROC using the JCIDS after Milestone A. Draft approved by the Military Service informs Milestone A decision. Updated, reviewed, and approved to support subsequent decisions as appropriate.
<b>Contracts and Contract-related Actions</b>	MDA generates. Approval can occur at various levels from Director MDA to lower levels; USD(R&E) can review/approve. Defense Pricing and Contracting (DPC) in OUSD(A&S) reviews larger dollar value contracts. MDA has autonomous contracting authority.	MDA generates. Approval can occur at various levels from Director MDA to lower levels. DPC in OUSD(A&S) reviews larger dollar value contracts. USD(A&S) could review/approve. MDA has autonomous contracting authority.	MDA generates. Approval can occur at various levels from Director MDA to lower levels. DPC in OUSD(A&S) reviews larger dollar value contracts. OA and/or USD(A&S) could review/approve. MDA assumed to retain autonomous contracting authority.
<b>Development Contract Request for Proposals (RFP)</b>	MDA generates; Director approves; USD(R&E) could review/approve.	MDA generates; Director approves; USD(A&S) with advice from USD(R&E) could review/approve.	MDA generates; Director approves; OA approves; USD(A&S) would review/approve.
<b>Source Selection Criteria</b>	MDA conducts; Director approves; USD(R&E) review/approves.	MDA generates; Director approves; USD(A&S) with advice from USD(R&E) reviews/approves.	MDA generates; Director approves; USD(A&S) reviews/approves.
<b>Acquisition Milestone Review and Approval / Documentation</b>	Process determined by Director, MDA subject to review and approval by USD(R&E) and the MDEB, with USD(A&S) as co-Chair. MDEB can advise regarding milestone readiness/approval.	Process determined by Deputy Secretary in March 2020 Memorandum---Authorities cited below can be delegated by USD(A&S) to Director, MDA under certain circumstances. USD(A&S) and USD(R&E) co-chair MDEB, which can advise regarding milestone readiness/approval.	Process determined by USD(A&S)/OA and Joint Staff directives/instructions; USD(A&S) could delegate authorities to a Service Acquisition Executive (SAE) or to the Director MDA. Defense Acquisition Board can advise regarding milestone readiness/approval.
<b>First Milestone</b>	Materiel Solutions Analysis (MSA); Director MDA is authority. USD(R&E) can review/approve.	MSA not explicitly required but could still exist with the potential for USD(A&S) approval with advice from USD(R&E) and the MDEB.	Materiel Development Decision (MDD); USD(A&S) is authority.
<b>Second Milestone</b>	Technology Development Decision (TDD); Director MDA is authority. USD(R&E) can review/approve.	TDD; USD(A&S) is decision authority; USD(R&E) assesses readiness and raises concerns to Deputy Secretary.	Milestone A (MS A, Technology Maturation and Risk Reduction); USD(A&S) is authority.

	Pre-March 2020 Oversight	Current Oversight—Deputy Secretary March 2020 Directive-Type Memorandum for Major/Special Interest Programs	DODI 5000.85 and CJCSI 5123.01H Oversight
<b>Third Milestone</b>	Product Development Decision (PDD); Director MDA is authority. USD(R&E) can review/approve.	PDD; USD(A&S) is decision authority; USD(R&E) assesses readiness and raises concerns to Deputy Secretary.	Milestone B (MS B, Engineering and Manufacturing Development); USD(A&S) is authority; Preceded by and potentially supplanted by Development Request for Proposals (RFP) Release Decision Point.
<b>Fourth Milestone</b>	Initial Production Decision (PD); USD(A&S) is authority. USD(R&E) can review/approve.	Initial PD USD(A&S) is authority; USD(R&E) assesses readiness and raises concerns to Deputy Secretary.	Milestone C (MS C, Low-Rate Initial Production); USD(A&S) is authority.
<b>Fifth Milestone</b>	Production Decision (PD); USD(A&S) is authority. USD(R&E) can review/approve.	PD; USD(A&S) is decision authority; USD(R&E) assesses readiness and raises concerns to Deputy Secretary.	Full-Rate Production Decision (FRP); USD(A&S) is authority.
<b>Analysis of Alternatives (AoA) Guidance and Sufficiency Review AoA Study Plan</b>	Not required. However, guidance for a Capability Gap Analysis is generated and approved within MDA.	Not Required. But if done, developed and performed by Director, Cost Assessment and Program Evaluation (DCAPE).	Developed and performed by DCAPE.
<b>AoA</b>	Not Required. However, MDA does conduct a Capability Gap Analysis assessing potential Materiel solutions to the needs cited in the PCL.	Not Required. But if done, subject to review and/or approval by USD(A&S) (with advice from USD(R&E)) and DCAPE.	Prepared by MDA; reviewed/approved by OA; approved by DCAPE. Required and subject to review and/or approval by OA, USD(A&S), JROC, DCAPE, and other OSD elements.
<b>Independent Cost Estimate (ICE)</b>	Performed by DCAPE prior to PD. May be performed to support earlier decisions as decided by Director, MDA.	Prepared by DCAPE at PDD and updated at PD.	Prepared by DCAPE at MS A and updated at MS B and MS C.
<b>Should Cost Estimate</b>	MDA defines program should cost initiatives. Should cost estimate provided to USD(A&S) at Initial PD and/or PD.	Not Required.	Prepared by MDA to support MS A and updated as appropriate; reviewed/approved by OA; approved by USD(A&S).
<b>Life Cycle Cost Estimate (LCCE)</b>	Cost estimates of varying content developed and reviewed within MDA, including as part of affordability assessments. MDA supports DCAPE in preparation of ICE as required.	Prepared by MDA in conjunction with Military Service and submitted to DCAPE before PDD.	Not Required.
<b>Independent Technical Risk Assessment (ITRA)</b>	Not Required. However, MDA does conduct Technology Readiness Assessments to support various reviews. These assessments can be performed by an independent entity to support PD.	Conducted by USD(R&E) before PDD and PD, supported by MDA.	Conducted by USD(R&E) before MS A, MS B, and MS C; presumably supported by MDA.
<b>Acquisition Strategy Report</b>	Acquisition strategies/plans and reports developed by program managers and reviewed within MDA. Approval can occur at various levels from the Director to the program manager.	Prepared by MDA in coordination with Military Service before TDD; reviewed and approved by OA; approved by USD(A&S); updated at PDD and PD.	Prepared by MDA before MS A; reviewed/approved by OA; approved by USD(A&S); updated at MS B and MS C



	<b>Pre-March 2020 Oversight</b>	<b>Current Oversight—Deputy Secretary March 2020 Directive-Type Memorandum for Major/Special Interest Programs</b>	<b>DODI 5000.85 and CJCSI 5123.01H Oversight</b>
<b>Test Strategy</b>	Integrated Master Test Plan (IMTP) prepared by MDA and reviewed/signed by DT&E, DOT&E, and others.	IMTP prepared by MDA and reviewed/signed by DT&E, DOT&E, and others.	Prepared by MDA before MS A; reviewed/approved by OA; approved by USD(A&S).
<b>Test and Evaluation Master Plan (TEMP)</b>	IMTP prepared by MDA and reviewed/signed by DT&E, DOT&E, and others.	IMTP prepared by MDA and reviewed/signed by DT&E, DOT&E, and others.	Prepared by MDA before MS B; reviewed/approved by OA; approved by USD(A&S); updated at MS C.
<b>Operational Test Plan</b>	IMTP prepared by MDA and reviewed/signed by DT&E, DOT&E, and others.	IMTP prepared by MDA and reviewed/signed by DT&E, DOT&E, and others.	Prepared by MDA after MS C; reviewed and approved by OA; approved by DOT&E.
<b>Evaluation of Operational Effectiveness and Suitability</b>	Director, Operational Test and Evaluation provides annual report to Congress and can, for selected programs, issue a report.	Director, Operational Test and Evaluation provides annual report to Congress and can, for selected programs, issue a report.	Formal report prepared by DOT&E and submitted to Secretary of Defense and Congress.
<b>Affordability Analysis</b>	Prepared by MDA program manager and reviewed within MDA at acquisition milestones.	Prepared by MDA in conjunction with Military Service and provided to DCAPE before PDD.	Prepared by MDA to support MS A review by USD(A&S); presumably reviewed/approved by OA.
<b>Program Goals / Program Goals Approval Memorandum</b>	Not Required.	Not Required.	Prepared and transmitted by USD(A&S).
<b>Program/Budget Planning and Approval</b>	Program Objective Memorandum (POM) developed by MDA, reviewed/approved by USD(R&E), submitted for review, amendment, and approval by Secretary of Defense (SECDEF).	POM developed by MDA, reviewed/approved by OA, submitted for review, amendment, and approval by SECDEF.	POM developed by MDA, reviewed/approved by OA, submitted for review, amendment, and approval by SECDEF.

- Testing, both developmental and operational, was determined by the Director, MDA and documented in an Integrated Master Test Plan (IMTP) revised each year. The IMTP was developed in consultation with OSD developmental test organizations, the Director, Operational Test and Evaluation (DOT&E), and the BMDS Operational Test Activity (OTA) (an Army office in Huntsville, Alabama), among others. Staff principals from all consulted organizations were invited by the Director, MDA to sign the IMTP if they agreed with its contents.
- Program and budget planning was conducted by MDA, reviewed and approved by USD(R&E), and then submitted for review and approval by the Secretary of Defense.

## **2. Missile Defense Agency under DTM**

MDA oversight is currently conducted according to the DEPSECDEF March 2020 DTM. All MDA programs will now require a lead Service Transfer Agreement (TA) in place (coordinated with the Secretary of that Service) and memorandum of agreement establishing a hybrid program office prior to the Product Development Decision (PDD). Under the current approach, the USD(A&S) is the AE with the authority to approve MDA progress through the Materiel Development Decision (MDD), Product Development Decision (PDD) and Production Decision (PD) for any program meeting the statutory definition of major.<sup>68</sup> That decision authority could be delegated by the USD(A&S) to the MDA Director; however, whether that will be done is currently unknown. Irrespective of whether delegation occurs, the Director, MDA would still have a substantial role in determining the content of the Ballistic Missile Defense System (BMDS). However, the process for review and approval of BMDS acquisition programs will no longer be within the exclusive purview of the Director, and requirements for individual BMDS elements (i.e., major individual programs) must be formally coordinated with the Military Services and STRATCOM. What follows assumes that authorities for major programs are not delegated.

- Authority for the Technical Development Decision (TDD), Product Development Decision (PDD) and Production Decisions (PDs) would rest with USD(A&S), who would co-chair the MDEB with the USD(R&E).<sup>69</sup> Previously, all these authorities were exercised by the MDA Director. Authority to initiate Material Solutions Analysis (MSA) is not specified in the DTM; it could still be exercised by the MDA Director. (Note the MDA acquisition decision points, are, respectively, analogous under the AAF for major capabilities to the Materiel Development Decision (MDD), Milestone A, Milestone B, Milestone C, and Full-Rate Production (FRP) (see Figure 3.1 and Table 3.1).
- Documentation required at the TDD includes an Acquisition Strategy (AS).

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<sup>68</sup> See Title 10 U.S. Code § 2430 - Major defense acquisition program defined.

<sup>69</sup> The DTM indicates that the USD(R&E) could raise significant concerns to the Deputy Secretary.

- Documentation required at the PDD includes a Top Level Requirements Document (TLRD) for the specific BMDS capability to be developed, prepared by MDA in coordination with STRATCOM and the Secretary of the lead military Service; a Transfer Agreement (TA) establishing criteria for transferring the BMDS capability to the Military Department prepared by MDA in conjunction with the Secretary of that Department; a Capability and Utility Assessment (CUA) prepared by STRATCOM; a Life Cycle Cost Estimate (LCCE) prepared by MDA and submitted to the Director, Cost Assessment and Program Evaluation (DCAPE); an Independent Cost Estimate (ICE) prepared by DCAPE; and an Independent Technical Risk Assessment (ITRA) prepared by USD(R&E). An updated AS is also required. An Analysis of Alternatives (AoA), if conducted, will use guidance prepared by DCAPE.<sup>70</sup> A CDD is required when programs transfer to the service.
- Documentation required at all PDs includes updates to the ICE, the ITRA, and the AS.
- The DTM does not discuss contracting, so the associated processes would presumably be unchanged.
- The DTM does not discuss test and evaluation in any detail, so the associated processes would presumably be unchanged.
- Program and budget planning would be conducted by MDA. The DTM does not discuss review and approval of that planning, but presumably, the MDEB, co-chaired by USD(A&S) and USD(R&E), could review MDA's proposed plans and recommend changes/additions to the Secretary and Deputy Secretary.

### **3. DoD 5000 Major Capability Acquisition**

Using the DoD 5000 Major Capability Acquisition pathway means that oversight is conducted under DoD 5000.85 (Major Capability Acquisition), CJCSI 5123.01H (Charter of the Joint Requirements Oversight Council (JROC) and Implementation of the Joint Capabilities Integration and Development System (JCIDS)), and other associated directives and instructions. The Secretary of Defense could presumably decide to use 5000.85 for acquisition oversight but defer using CJCSI 5123.01H to oversee development and approval of requirements.

This discussion assumes both would be used in the revised approach but provides separate descriptions of the changes associated with oversight of requirements. We also allow for MDA to report to an Oversight Authority (OA) other than USD(R&E). That OA could be another OSD Principal Staff Assistant (PSA); i.e., the USD for Acquisition and Sustainment (USD(A&S)) or a Service Acquisition Executive (SAE), or some other official, possibly but not necessarily one with acquisition-related responsibilities. The organizational assessment portion of this study considers

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<sup>70</sup> MDA is not required to do AoAs but has done them for large efforts in the past. The DTM does not change MDA's AoA requirements, but instead documents the prevailing practice which is, if an AoA is conducted, CAPE "Provides guidance and sufficiency review of analyses of alternatives for MDS elements."

the Deputy Secretary of Defense; the Commander, U.S. Strategic Command; USD(A&S); USD(R&E); and the Chief of the Space Force or the Space Force Acquisition Executive/Authority as possible OAs, with the latter three assessed in detail.<sup>71</sup>

If the OA is an SAE, such as the AE for the Space Force, the OA would be capable of communicating directly with the USD(A&S) who would retain ultimate acquisition decision authority unless that person delegated it to another official, in particular an SAE.

One overarching policy in the Adaptive Acquisition Framework is to “manage efficiently and effectively,” and supporting this policy is that “program information requirements must be required by statute or specifically selected (i.e., “tailored-in”) by the program manager and approved by the milestone decision authority. The DAE or the SAEs may provide implementation guidance to achieve this objective.”<sup>72</sup> This means that some required reporting and documentation could, but may not necessarily be, waived or tailored out.

The description that follows describes in more detail the summary of the oversight features associated with the three approaches provided in Table 3.1 if MDA were under DoD 5000. The OA would be the AE directly overseeing MDA activities, perhaps subject to additional review and approval by acquisition officials above the OA, including the USD(A&S). The Director, Missile Defense Agency (MDA), would function in a manner that could be analogous to current Service Program Executive Officers (PEOs). The Director, MDA would still have a substantial role in determining all aspects of the Ballistic Missile Defense System (BMDS). However, the process for review and approval of BMDS acquisition programs and requirements would no longer be within the exclusive purview of the Director.

- The review process used within MDA could still be determined by the Director, but the process used for obtaining approval from the OA would be conducted according to DoD 5000.85. Depending upon the “path” approved for use by the USD(A&S) (who is the decision authority for acquisition paths), multiple decision points could occur and multiple reviews could be conducted for programs meeting the major acquisition program criteria.<sup>73</sup> Assuming the major program path is used, and documentation is not waived or tailored out, reviews would comprise the following:
  - Documentation required at the Material Development Decision (MDD) includes guidance for conducting an Analysis of Alternatives approved by the Director, Cost Assessment and Program Evaluation (CAPE), an AoA study plan prepared by MDA and approved by the OA, and an Initial Capabilities Document (ICD) developed by MDA and formally approved by the JROC according to CJCSI

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<sup>71</sup> As of December 15, 2020, a decision on the official who will be the Space Force Acquisition Executive has not been made.

<sup>72</sup> DoD Directive 5000.01, “The Defense Acquisition System,” 9 September 2020.

<sup>73</sup> See Title 10 U.S. Code § 2430 - Major defense acquisition program defined.

5123.01H, after review and approval by the OA. Use of the JCIDS would require multiple reviews with participation by all the Services.<sup>74</sup>

- Documentation required at Milestone A (MS A) includes an Independent Cost Estimate (ICE) performed by OSD(CAPE), a “Should Cost” estimate prepared by MDA and approved by the OA, an Independent Technical Risk Assessment performed by USD(R&E), an Acquisition Strategy (including among other content a master schedule) prepared by MDA and approved by the OA, a test strategy prepared by MDA and approved by the OA, an Affordability Analysis prepared by MDA and approved by the OA, and a draft Capabilities Development Document (CDD) providing key performance parameters (KPPs) and key system attributes (KSAs), approved by the OA. Formal program goals, including cost and schedule, would be developed by MDA after completion of the AoA, reviewed and approved by the OA, and then reviewed by the USD(A&S) and the Vice Chairman of the Joint Chiefs of Staff (VCJCS). The goals would be formally documented in a program goals approval memorandum signed by the USD(A&S).
- Documentation required at MS B is essentially that required at the development RFP release decision point (DRRDP) that shortly precedes MS B (and is not depicted in Figure 3.1). That documentation includes an updated ICE, ITRA, and “Should Cost” estimate, a JROC formally validated CDD, and a development RFP prepared by MDA and approved by the OA. A Test and Evaluation Master Plan (TEMP) is developed by MDA, approved by the OA, and reviewed and approved by DOT&E. A Program Support Strategy (PSS) would be developed by MDA after MS B and reviewed and approved by the OA.
- Documentation required to support MS C and the production RFP release decision point (PRRDP) that shortly precedes it includes a production RFP developed by MDA and approved by the OA, and updates to the AS, ICE, ITRA and TEMP (reviewed and approved as indicated previously). After MS C, but before the full-rate production decision, a report by the DOT&E assessing operational effectiveness and suitability would be required.
- Contracts, including contract specifications, requests for proposals (RFPs), and evaluations of responses to RFPs would be prepared by MDA but reviewed and approved as directed by the OA and the USD(A&S), which could involve more substantial and substantive participation by staffs outside MDA than occurs currently. The Services would continue to be involved, likely more formally, regarding the content of these products and associated decisions, especially in cases where ongoing Service

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<sup>74</sup> Without revisions, an ICD takes 97 days and a CDD takes 103 days to staff through the JCIDS. IDA has no information regarding the timelines associated with the prior and current approaches to requirements generation and approval.

programs are affected. That involvement and consultation would be proposed by the Director, MDA, but ultimately decided by the OA and USD(A&S).

- An ICD and a CDD, the latter incorporating KPPs and KSAs, would be developed by MDA, reviewed and approved by the OA, and formally validated by the JROC using the JCIDS. The form of the requirements provided in these documents could be consistent with MDA's current approach of pursuing incremental improvements in BMDS capabilities analogous to the approach currently used to develop requirements for so-called spiral development programs. However, the ultimate determination of whether that approach could be used would be made by the JROC. The existing process the Combatant Commands use to develop and submit their Integrated Priorities Lists (IPLs) for review and endorsement by the JROC and consideration by the Secretary and Deputy Secretary during the annual program/budget reviews would likely be used to obtain input from the Combatant Commands.
- Developmental and operational testing would be proposed by the Director, MDA and documented in a Test Strategy and a TEMP reviewed and approved by the OA and by DOT&E. Whether the IMTP could be used as a substitute for the Test Strategy and TEMP would need to be determined by the OA, USD(A&S), and DOT&E. An operational test plan, describing the conduct of the formal operational testing to be conducted prior to full-rate production and deployment of the capabilities MDA is pursuing would need to be developed by MDA, approved by the OA, and reviewed and approved by DOT&E, likely with the involvement of the BMDS OTA. This would occur after MS C but prior to low-rate initial production.
- Program and budget planning would be conducted by MDA, reviewed and approved by the OA, and then submitted for review and approval by the Secretary of Defense.

Oversight conducted under DoD 5000.85 and JCIDS would involve the generation and formal approval of multiple formal documents at multiple decision points and potentially involve multiple levels of approval and multiple staffs in many organizations (see Table 3.1). However, the levels of approval would be reduced if the USD(A&S) delegated oversight of MDA programs to the OA or to the Director, MDA. Even in that scenario, there would be a requirement for development, review, and approval of a number of documents by the OA and the JROC not now formally required, although analogs to these documents are, in a number of cases, part of MDA's current deliberations. Under the AAF, it is possible that some of these documents could be tailored out or waived, but this process could be unique to every program. And as mentioned at the beginning of this section, it is also possible that the use of JCIDS could be deferred.

## **E. Comparing Acquisition Processes**

This section compares the acquisition approaches used by MDA and that of DoD 5000 for major capability programs. In an effort to see if there were some data-driven way to objectively

compare approaches, the study team also examined a few example programs executed under MDA's pre-DTM approach and under DoD 5000 prior to its most recent revisions. Our examination found no data enabling conclusions regarding whether there have been significant differences in program outcomes between the two prior oversight approaches.

## 1. Acquisition Processes

The study team compared the acquisition processes of MDA prior to the DTM, MDA under the DTM, and DoD 5000 for major capabilities. The observations are based mostly on written documentation; the main challenges are that both MDA under the DTM and the revised DoD 5000 Adaptive Acquisition Framework are fairly new and no programs have significant experience with either process. Because of that, for example, documentation like Top Level Requirements Documents (TLRD) or Capability and Utility Assessments (CUA) required by the DTM have not been produced yet, and the team was therefore unable to compare them to JCIDs documents to assess the similarities and differences.<sup>75</sup>

Both MDA and DoD 5000 for major capability processes have similar phases and milestone decision points. Figure 3.1 shows the phases and milestones.

- **Matériel Solutions Analysis (MSA).** For MDA, the purpose of this phase is to “Analyze capability gap and consider matériel solution alternatives.” Similarly, under DoD 5000, the purpose of this phase is to “conduct the AoA and other activities needed to choose the concept for the product to be acquired, to begin translating validated capability gaps into system-specific requirements, and to conduct planning to support a decision on the acquisition strategy for the product.”
- **Technology Development / Technology Maturation and Risk Reduction.** For MDA, the purpose of this phase is to “develop and mature technology (e.g., technology prototyping, knowledge points).” For DoD 5000, the phase is to “reduce technology, engineering, integration and life-cycle cost risk to the point that a decision to contract for EMD can be made with confidence in successful program execution for development, production and sustainment.”
- **Product Development / Engineering and Manufacturing Development.** For MDA, this phase serves to “develop and mature the specific product solution (e.g., product design, developmental test, operational test, and manufacturing).” For DoD 5000, the purpose of this phase is to “develop, build, test, and evaluate a matériel solution to verify that all operational and implied requirements, including those for security, have been met, and to support production, deployment and sustainment decisions.”

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<sup>75</sup> MDA claims that they have historically been formulating documents that are similar to the TLRD, but the study team did not have the opportunity to review any examples.

- Production / Production and Deployment. This phase consists of two distinct decisions: For MDA both decisions are called a Production Decision (PD); the first is the initial PD where the objective is to “Provide an initial base for production and supply production representative articles for continued operational test and initial fielding” while similarly for DoD 5000, the first decision is called Low-Rate Initial Production (LRIP), Milestone C, or Limited Deployment which commits “resources required to enter production and begin deployment of the product.” The second decision in this phase for MDA is simply called the PD to “Produce final operational end items to satisfy Warfighter-capability requirements”<sup>76</sup> while under DoD 5000, the second decision is Full-Rate Production (FRP) or Full Deployment Decision where the decision is made “. . . following completion of operational testing of representative initial production products, to scale up production and/or deployment.”<sup>77</sup>

The documentation to support decisions at each phase is extensive in both processes. While MDA Directive 5013.02 INS is under revision at the time of this report, its table of program acquisition documentation includes 41 distinct requirements (although some of these may be contained in a single report, e.g., the Acquisition Strategy Report may contain or summarize up to seven requirements). Not all of these are required for every program, and some of these are updated at each decision point while others are done only once during the acquisition process.<sup>78</sup> The study team accessed the Milestone Document Identification Tool from Defense Acquisition University to produce a list of documentation required for a DoD 5000 major program.<sup>79</sup> There are 27 statutory and 35 regulatory reporting requirements. For some, updates are required at multiple milestones, while others are only done once during the process.

Figure 3.2 shows selected documentation requirements to support the milestones in each process. Documents were selected to illustrate the differences between MDA prior to the DTM, MDA under the DTM, and for DoD 5000 for major programs. The organizations with approval authority or with which MDA would require coordination are also shown. Prior to the DTM, MDA’s instruction states that “MDA’s Capability Gap Analysis is similar in intent to analysis of alternatives (AoA) studies”<sup>80</sup> but CAPE indicated that MDA had performed formal AoAs in the past. The TLRD and CUA are intended to ensure warfighter buy-in before product development begins, but it is not clear how closely they will resemble ICDs and CDDs from JCIDS. Also note that under the AAF, ““tailoring-in” means that the program manager will identify, and recommend for decision authority approval, the regulatory information that will be employed to document

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<sup>76</sup> Acquisition Management, “MDA Directive 5013.01,” September 2019.

<sup>77</sup> 5000.02T, *Operation of the Defense Acquisition System*, Incorporating Change 9, November 19, 2020.

<sup>78</sup> MDA 5013.02INS, *Acquisition Management*, 24 August 2013, under revision.

<sup>79</sup> Milestone Document Identification Tool (MDID). [https://www.dau.edu/tools/t/Milestone-Document-Identification-Tool-\(MDID\)-](https://www.dau.edu/tools/t/Milestone-Document-Identification-Tool-(MDID)-) Accessed 18 November 2020.

<sup>80</sup> MDA 5013.02INS, under revision.



program plans and how that information will be formatted and provided for review by the decision authority . . . Statutory requirements will not be waived unless a statute permits.” This implies that some of the documentation indicated for DoD 5000 under the AAF could be tailored out or waived. Subject to this uncertainty, what is clear from Figure 3.2 is that under the DTM, MDA no longer has exclusive control of documentation, milestones, or requirements. DoD 5000 for major programs without tailoring has more reporting and external review/approval requirements than the DTM.

Milestone Decision Authority ← USD (A&S) →

	MDD	MS A	MS B	MS C	FRP	Coord/Approval
Acquisition Strategy (AS)						USD (A&S)
Analysis of Alternatives (AoA)						CAPE, if AoA is directed
AoA Study Guidance and AoA Study Plan						
Independent Cost Estimate (ICE)						CAPE
Independent Technical Risk Assessment (ITRA)						USD (R&E)
Requirements Documents	ICD	Draft CDD	CDD	CDD		JROC
Transfer Agreement						

**DOD 5000 Major Capability Acquisition**

Milestone Decision Authority ← USD (A&S) →

	MDD	TDD	PDD	Initial PD	PD	Coord/Approval
Acquisition Strategy (AS)						USD (A&S)
Analysis of Alternatives (AoA)						CAPE provides guidance and sufficiency review if AoA is done
AoA Study Guidance and AoA Study Plan						
Independent Cost Estimate (ICE)						CAPE
Independent Technical Risk Assessment (ITRA)						USD (R&E)
Requirements Documents*			TLRD & CUA	CUA	CUA	Lead Service and COCOMs/CUA -STRATCOM. TLRD-MDEB (OFSC, in some cases JROC)
Transfer Agreement						Lead Service

\* CDD is required when programs transfer

**Missile Defense Agency DTM**

Milestone Decision Authority ← Director, MDA → USD (A&S) →

	MDD	TDD	PDD	Initial PD	PD	Coord/Approval
Acquisition Strategy (AS)						USD (A&S) at PD since 2017
Analysis of Alternatives (AoA)						“MDA’s CGA is similar in intent to AoA studies”
AoA Study Guidance and AoA Study Plan						
Independent Cost Estimate (ICE)						CAPE
Independent Technical Risk Assessment (ITRA)						USD (R&E) “special interest” programs
Requirements Documents*						
Transfer Agreement						

\* CDD is required when programs transfer

**Missile Defense Agency Pre- DTM**

**Figure 3.2 Acquisition Process Documentation and Oversight<sup>81,82,83,84</sup>**

Before the DTM, MDA retained control of nearly all aspects of its programs and budgets, subject to review and change by the USD(R&E) for major programs.

<sup>81</sup> Deputy Secretary of Defense Directive Type Memorandum 20-002, “Missile Defense System Policies and Governance,” 13 March 2020.

<sup>82</sup> MDA 5013.02INS, under revision.

<sup>83</sup> Milestone Document Identification Tool (MDID).

<sup>84</sup> Email correspondence with USD(A&S), 22 Jan 2021.

- MDA used milestones and documentation with analogs to many of the DoD 5000 requirements for major programs, but controlled generation and approval of those milestones and documents.
- MDA established hybrid program offices composed of MDA and Service personnel for program execution.
- MDA consulted with USD(R&E), STRATCOM, and occasionally the JROC regarding requirements, but largely controlled requirements generation and approval. A CDD was required for systems that transferred to the services.

Under the DTM, MDA no longer has exclusive control of acquisition documentation, milestones, and requirements, but does not have to adhere to all the DoD 5000 requirements and is not subject to the JCIDS process.

- Documentation including an AS, an ICE, an ITRA, a TLRD, and a CUA are required and prepared either by entities outside MDA or subject to review by such entities.
- Requirements must be generated in coordination with the Military Services and the Combatant Commanders.

Without tailoring or waivers, oversight conducted under DoD 5000 would require the full range of acquisition documentation. If not exempted from JCIDS, an ICD and CDD are also required which would involve formal review of requirements for all major programs. This would appear to be the case even if decision authority were delegated to a Service SAE or to the Director, MDA.

Observations regarding potential pros and cons associated with each of the three approaches to conducting oversight are provided in in Table 3.2. There is little quantitative data available to IDA that could be used to distinguish among the three approaches, so statements of the pros and cons are qualitative. They are considered in the context of process timeliness, independent reviews, and documentation. The predominant view expressed during the interviews IDA conducted is that use of the DoD 5000 and the JCIDS would bring delays and additional work, but some pointed to the potential benefits of wider review and use of the existing processes.

**Table 3.2 Potential Pros and Cons of Prior, Current, and DoD 5000 Approaches to MDA Oversight**

	Pre-March 2020 Oversight	Current Oversight—Deputy Secretary March 2020 Directive-Type Memorandum for Major/Special Interest Programs	DoDI 5000.85 and CJCSI 5123.01H Oversight
<b>Requirements Generation and Approval</b>	MDA largely controlled requirements generation and approval while consulting with the Services and Combatant Commands, particularly STRATCOM. Requirements generated include those for the integrated BMDS as well as its components. Extent of independent review controlled by MDA, which could limit opportunities to identify and resolve issues.	MDA does not control requirements generation and approval. Formal coordination required with STRATCOM, the Combatant Command, and the individual Services. Review process likely, but not necessarily longer and more complex. Wider review of requirements increases opportunities for early identification and resolution of issues.	MDA does not control requirements generation and approval. JCIDS is used requiring formal review and approval at multiple levels involving all the Services. Review process likely, but not necessarily, longer. Substantially wider review of requirements increases opportunities for early identification and resolution of issues. How requirements for the integrated BMDS and its components would be handled determined by JROC.
<b>Transfer to Services</b>	Preparation after development and initial fielding have incurred delays and could preclude resolution of potentially significant issues, but does not affect program initiation and execution.	Preparation to support PDD enables earlier identification and resolution of issues potentially affecting development and fielding, but could delay program progress if contentious issues arise.	A lead Military Service is identified at the outset, which could require intervention by the Secretary and Deputy Secretary, but avoids late identification of issues.
<b>Contracts and Contract-related Actions</b>	MDA largely controls but works closely with the Services, as appropriate.	MDA largely controls but works closely with the Services, as appropriate.	MDA largely controls but works closely with the Services, as appropriate. Development RFP reviewed prior to release by USD(A&S) for major programs introduces an additional review and potentially additional time.
<b>Acquisition Milestone Review and Approval / Documentation</b>	MDA largely controlled and determined extent of outside/independent review. Extent to which timelines shorter compared with alternatives unknown.	USD(A&S) is decision authority for three milestones. A number of documents and independent assessments are required whose preparation and approval are not controlled by MDA. The time required to prepare for and conduct reviews by USD(A&S) will likely be longer by an unknown amount. Whether the additional time required for reviews will significantly increase the time to fielding is also unknown. Wider review provides opportunities for earlier identification and resolution of issues.	USD(A&S) is decision authority for all milestones. DoD 5000 documentation preparation, review, and approval requirements apply. The time required to prepare for and conduct reviews by USD(A&S) would likely be longer by an unknown amount. Whether the additional time required for reviews will significantly increase the time to fielding is also unknown. Wider review provides opportunities for earlier identification and resolution of issues.
<b>Test Planning and Approval</b>	MDA controls preparation and review of Integrated Master Test Plan (IMTP). Review limited to most knowledgeable stakeholders in DT&E, DOT&E, and BMD Operational Test Activity. Extent to which timelines shorter compared with more formal alternatives unknown.	MDA controls preparation and review of Integrated Master Test Plan (IMTP). Review limited to most knowledgeable stakeholders in DT&E, DOT&E, and BMD Operational Test Activity. Extent to which timelines shorter compared with more formal alternatives unknown.	Formal review and approval of test strategies and plans required. Timelines likely, but not necessarily increased, but extent unknown. Wider deliberate review could provide opportunities for earlier identification and resolution of issues.
<b>Program/Budget Planning and Approval</b>	Program Objective Memorandum (POM) developed by MDA, reviewed/approved by USD(R&E), potentially with the advice of the MDEB; submitted for review, amendment, and approval by Secretary of Defense (SECDEF).	POM developed by MDA. Other review and approval not specified but could involve both USD(A&S), USD(R&E), as well as the MDEB; submitted for review, amendment, and approval by Secretary of Defense (SECDEF).	POM developed by MDA. Other review and approval not specified but could involve both USD(A&S), USD(R&E), or other OA, as well as the MDEB; submitted for review, amendment, and approval by Secretary of Defense (SECDEF).

## 2. Example Programs

Although the study team heard many anecdotes regarding the slowness of DoD 5000 and JCIDS, we could find no data supporting definitive conclusions as to differences in program outcomes between programs executed by MDA and those executed under DoD 5000.

IDA analyzed all MDAPs in 2015 executed under the prior versions of DoD 5000 in an effort to determine whether such programs were experiencing increased cycle times. IDA found that cycle times for typical programs were actually not increasing between the 1980s and 2015, and that the median time was eight years between MS B and Initial Operational Capability (IOC).<sup>85</sup> There was cycle time growth in space and C3 systems.<sup>86</sup>

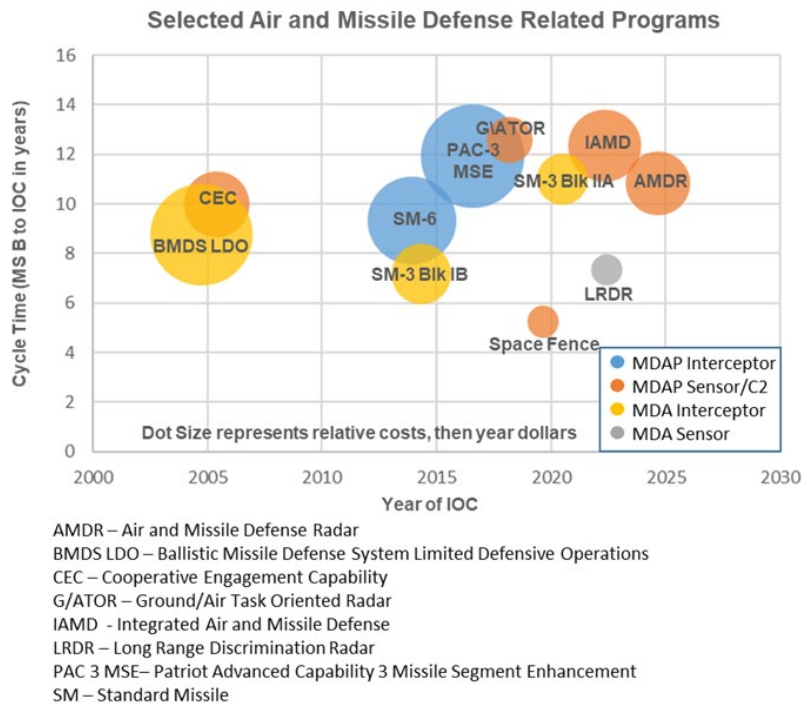
The study team performed a similar analysis examining a small set of programs for sensors, C2, and interceptors that were executed by MDA as well as under DoD 5000. It should be noted that these programs were executed prior to the DTM and before the AAF. The cycle times for the programs that are MDAPs executed under 5000 are defined as the time from Milestone B to IOC as indicated in their selected acquisition reports (with the exception of Space Fence detailed below). The relative size in then-year dollars and cycle time as a function of IOC year are plotted in Figure 3.3. Unfortunately, no definitive conclusions can be drawn from our analysis:

- Effectiveness and number of items procured are, respectively, not evident and disparate. For example, the BMDS Limited Defensive Operations consisted of five emplaced interceptors of undemonstrated effectiveness. In terms of numbers, the PAC3 MSE is a procurement of 3,100 missiles; the SM-6 is 2,330 missiles; while there are 374 SM-3 Block IBs through 2021, and 107 SM-3 Block IIAs through 2025.
- Initial Operational Capability is not uniformly defined. For SM-3 Block IB the cycle time is based on Preliminary Design Review to readiness for deployment. For SM-3 Block IIA it is from System Design Review to readiness for production. For the LRDR, we used approval of acquisition strategy to Operational Capability Declaration. Not all definitional issues are isolated to MDA; e.g., the Space Fence uses Required Assets Available rather than IOC. Spiral capability increments do not readily lend themselves to this analysis.
- Sample sizes are small and programs are designed for different missions and employ different technologies. There are few programs to compare. While there is a 26-month difference between SM-6 and SM-3 Block IB, there is nothing conclusive to say as missile quantities, engineering challenges, and the purposes of each weapon system are substantially different.

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<sup>85</sup> Unlike GAO's analysis cited previously, IDA's analysis considered statistical significance of differences in cycle times and found none. It also looked at a different period.

<sup>86</sup> David M. Tate, *Acquisition Cycle Time: Defining the Problem* (Revised), IDA Document NS D-5762, October 2016.



**Figure 3.3 Selected MDA and DoD 5000 Sensor, C2, and Interceptor Programs**

- No programs have been acquired under the DTM or AAF. So no differences in program timing between these two processes and the prior 5000 and MDA processes can be discerned using this list of programs.

There are no Middle Tier of Acquisition (MTA) programs plotted here. Most of the air and missile defense-related MTAs (SM-2 Block 3C Seeker, SM-6 Rocket Motor, Lower Tier Air and Missile Defense Sensor (LTAMDS)) are relatively small prototyping efforts that have not reached their five-year decision point and are too new to show what the timeline and costs would look like using the MTA pathway if they enter production.<sup>87</sup> MTA is discussed in the next section.

## F. Other Acquisition Processes

This section describes the DoD 5000 Middle Tier of Acquisition (MTA) and the processes used by some rapid capability organizations. These were initially examined to see if they would have applicability to MDA. Some similarities are evident, but there were significant differences observed in technology maturity and program size (major capabilities). The study team did not directly compare and contrast these approaches to MDA’s process, but describe them here for completeness.

<sup>87</sup> GAO-20-439, *Defense Acquisitions Annual Assessment*, June 2020.

## 1. DoD 5000 Middle Tier of Acquisition

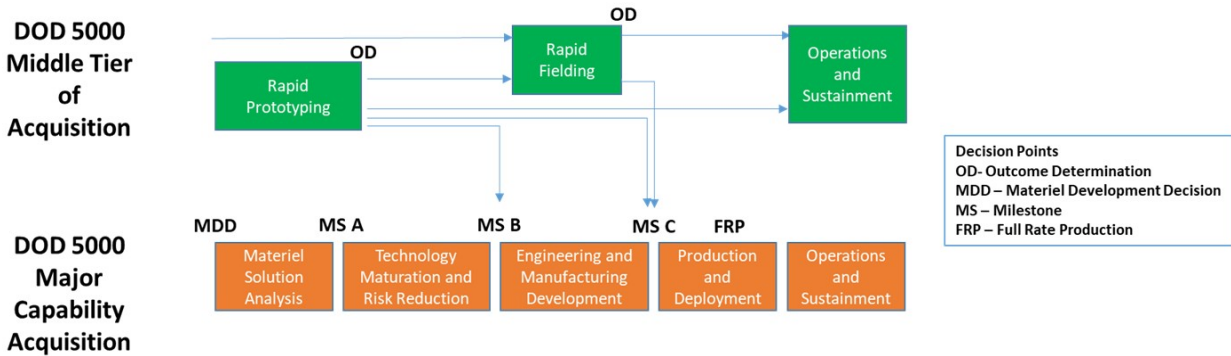
The Middle Tier of Acquisition (MTA) is one of the six approaches available in the AAF. Using this pathway means oversight and reporting is governed under DoD 5000.80.<sup>88</sup> This pathway was intended for rapid prototyping and rapid fielding as provided for in Section 804 of Public Law 114-92. It is intended to allow for mature technologies to be prototyped or proven technologies to be fielded within five years of program start. Use of this pathway is discouraged for “major systems intended to satisfy requirements that are critical to a major interagency requirement or are primarily focused on technology development, or have significant international partner involvement.”

- The use of the MTA path would need to be approved by USD(A&S). If this is allowed, under the MTA, the MDA Director or OA would have some ability to determine the review process. There are fewer decision points and reviews (see Figure 3.4). But an outcome decision is required five years after program start.
- MTA programs are not subject to JCIDs or oversight by the JROC. MDA or its OA would need to have a process to meet needs communicated by the Joint Staff and COCOMs, with the process resulting in an approved requirement. Presumably the existing WIP and OFSC would serve this function.
- In Figure 3.4, a program can take different paths under MTA. A rapid prototyping could enter the Major Capability pathway at MS B or MS C, while a rapid fielding program could also transition at MS C. These would entail the kinds of documentation, review, and approval conducted for major programs when an MDA program employing the middle tier transitioned at MS B or MS C, if it did so, rather than proceeding directly to deployment/fielding.

Use of the middle tier approach, if approved by the USD(A&S), would likely be less of a change relative to MDA’s current approach, e.g., without involving the JROC early in determining program requirements. But it would also involve some changes, such as adhering to a five-year time limit for prototyping or fielding that would be infeasible for MDA programs requiring substantial developments such as the Next Generation Interceptor.

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<sup>88</sup> DoDI 5000.80, “Operation of the Middle Tier of Acquisition,” 30 December 2019.



**Figure 3.4 Milestones and Phases of DoD 5000 MTA and Major Capability Acquisition**

## 2. Review of Rapid Capability Organizations (RCOs)

The study team conducted interviews and reviewed available documentation on a number of rapid capability organizations. The following descriptions are based on what we were told and what could be readily found regarding the operations of the associated offices. Similar key principles appear to be common among RCOs, including short reporting chains, a small board of directors, and early warfighter involvement. Some organizations rely on mature technologies, while others attempt to prototype S&T efforts to determine military utility. The ones involved in program acquisition indicate that they employ many of the practices contained in DoD 5000 and make use of tailoring.

Regarding RCOs, the study team concluded the following:

- Some are organizations that can or appear to be able to move quickly through the entire acquisition process. They appear to focus on relatively mature technologies, have short reporting chains, and simplified requirements, often (but not always) for incremental improvements in capabilities. However, some RCO’s are relatively young and have yet to field substantial operational capabilities.
- Some are organizations that appear to focus on rapid prototyping of S&T to demonstrate combat utility. This attempts to avoid the valley of death that some technology programs face transitioning into warfighting capabilities.
- Few of these particular organizational models appear to be directly applicable to MDA’s major efforts, such as the Next Generation Interceptor and Hypersonic and Ballistic Tracking Space Sensor, due to the substantial development effort of complex systems and timelines such programs entail.

### a. Space Rapid Capabilities Office

The Space Rapid Capabilities Office was created by the 2018 National Defense Authorization Act and established to push the bounds of performance for capability delivery. Its mission is described as “to contribute to the development of low-cost, rapid reaction payloads, busses, launch,

and launch control capabilities in order to fulfill joint military operational requirements of on-demand space support and reconstitution; to coordinate and execute space rapid capabilities efforts across the DoD with respect to planning, acquisition and operations; and to rapidly develop and field space capabilities.”<sup>89</sup> Its key operating principles include a short and narrow chain of command, early and consistent warfighter involvement, small integrated and empowered program teams, and embedded functional support.

- Milestone Decision Authorities, reviews. The study team was told that OSD does not have milestone decision authority for any Space RCO programs, while the Air Force SAE has milestone decision authority for three. Everything else has been delegated to the Space RCO Director. This allows the organization flexibility to tailor milestones.
- Documentation. The study team was told that the program managers at the Space RCO use a Navy tool that assists tailoring 5000-based review content consistent with program timelines.
- Requirements. The Space RCO is specifically exempted from JCIDS by law.<sup>90</sup> The Commander of the United States Space Command establishes and validates capability requirements. The process as described is similar to MDAs, where desired capabilities identified by the warfighter are compared with achievable capabilities, and programs are then approved by a Board of Directors.
- Contracts. The Space RCO indicated that use of Indefinite Delivery Indefinite Quantity (IDIQ) contracts helped move things quickly. Having a set of qualified contractors in place allows the Space RCO to compete contracts with many bidders quickly.
- Program Budgeting. The Space RCO budget is set by the Secretary of the Air Force. If funding is needed out-of-cycle the Secretary has special authority to move up to \$30M within the Air Force to get started if the Board of Directors deems a program as highly critical.

The Space RCO claims to be able to deliver Major Programs in about one-third of the time of other programs.<sup>91</sup> The capabilities it delivers are described as usually mature, with little to no S&T, and little technology development.

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<sup>89</sup> “Space Rapid Capabilities Office Fact Sheet,” 29 October 2020.

<sup>90</sup> Pub. L. 115-91, § 1601, 2017; 10 U.S.C. § 2273c.

<sup>91</sup> IDA was provided no data substantiating this claim.



### **b. Department of the Air Force Rapid Capabilities Office**

The Air Force Rapid Capabilities Office was activated in 2003 and “delivers capabilities at the speed of emerging threats.” Its key operating principles include a short and narrow chain of command, early and prominent war-fighter involvement, and funding stability.<sup>92</sup>

- Milestone Decision Authorities, reviews. The study team was told that concepts are taken directly to a small Board of Directors and therefore bypass the Service functional teams, corporate discussions, and normal staffing packages. It was also mentioned that programs are typically classified and therefore able to avoid parts of the OSD staffing process.
- Documentation. The study team was told that the AF RCO follows the principles of DoD 5000 while tailoring documentation and reporting requirements.
- Requirements. The study team was told that the AF RCO responds to Air Force Major Command and warfighter requirements. RAND indicates that “requirements are kept stable to avoid drawn-out acquisition timelines.”<sup>93</sup>
- Contracts. “The DAF RCO follows the FAR and DFARS while adhering to the tailored philosophy of DoDI 5000.02.”<sup>94</sup>
- Program Budgeting. “The DAF RCO has the flexibility to allocate certain sources of stable, year-over-year funding to pursue new initiatives and capabilities identified by the warfighter and approved by its Board of Directors.”<sup>95</sup>

The study team was told that few AF RCO programs are Major Defense Acquisition Programs (MDAPs).<sup>96</sup> Literature indicates that the AF RCO both leverages existing technology to speed capabilities into service as well as conducting experiments into advanced processes, methods, and techniques. But its main acquisition strategy is to focus on commercial or government off-the-shelf technologies to produce rapid point solutions.<sup>97</sup>

### **c. Army Rapid Capabilities and Critical Technologies Office**

The Army RCCTO was established in 2016 to expedite critical capabilities to the field to meet Combatant Commanders’ needs. Its mission is to “rapidly and efficiently research, develop, prototype, test, evaluate, procure, transition, and/or field critical enabling technologies and

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<sup>92</sup> “AF Rapid Capabilities Office Fact Sheet,” 23 November 2020.

<sup>93</sup> Philip S. Anton, et al., *Strategies for Acquisition Agility*. RAND RR-4193, 2020.

<sup>94</sup> Ibid.

<sup>95</sup> Ibid.

<sup>96</sup> The B-21 Raider is a notable exception.

<sup>97</sup> Philip S. Anton, et al., 2020.

capabilities that address near-term, and mid-term threats.”<sup>98</sup> Its key operating principles are a short and narrow chain of command, overarching programmatic insight, early and prominent warfighter involvement, and a collaborative integrated team of functional specialists.

The study team was told that the RCCTO focuses on developing prototypes and delivering them to operational units to assess combat utility. This is generally done near the completion of S&T efforts and before handing the prototype to a PEO to enter the regular acquisition process. The office does not do any production and retains no expertise after hand-off. The organization has decision authority over its process and described its requirements as “simplified,” for example, “build a hypersonic weapon by 2023.” No threshold or objective performance parameters are specified. If a decision is made to take the prototype to production, it is handed over to a PEO with characteristics defined and military utility proven. The PEO will be responsible for JROC requirements, the acquisition decision points, and documentation. The organization is guided by a Board of Directors that sets priorities. In general, the RCCTO appears to focus on assessing the military utility of S&T efforts before programs enter the regular Service acquisition and DoD 5000 process.

#### **d. USMC Rapid Capabilities Office**

The Marine Corps Rapid Capabilities Office was formed in 2016 to “accelerate the identification, development and assessment of emergent and disruptive technology” to “rapidly develop and deliver operational prototypes that increase Operational Forces’ survivability and lethality, and to provide operational assessments that inform requirement development and investment planning.”<sup>99</sup> Its key operating principles include a short chain of command, early and prominent warfighter involvement, small integrated product teams, and funding stability.

The MCRCO requirements are not formal, but obtain inputs from operational units and other similar sources. A portfolio determination by the Board of Directors decides if this materiel solution can be executed in less than 12 months. Operating Forces are equipped with prototypes and conduct military utility assessments. Based on this, a decision is made by the Board of Directors to determine the disposition of the proposal which could include accelerated acquisition to a program of record, requirement transition, return to S&T, or do not pursue.

The study team was told that the MCRCO is using a SOCOM-like approach appropriate for USMC programs. The charter indicates that the MCRCO program portfolio “primarily contains non-ACAT program efforts.” In general, the MCRCO appears to focus on assessing the military utility of S&T efforts before programs enter the regular Service acquisition and DoD 5000 process.

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<sup>98</sup> Army RCCTO website, <https://rapidcapabilitiesoffice.army.mil/about/>, Accessed 15 December 2020.

<sup>99</sup> 1000 MCRCO, *Marine Corps Rapid Capabilities Office (MCRCO) Charter*, 20 August 2017.

#### **e. Space Development Agency**

The Space Development Agency was established in 2019 to “create and sustain lethal, resilient, threat-driven, and affordable military space capabilities that provide persistent, resilient, global, low-latency surveillance to deter or defeat adversaries.” SDA distinguishes itself from DARPA and the Space RCO, indicating that “DARPA and the Space Rapid Capabilities Office work to develop leap-ahead technologies that might enable the capabilities brought to the warfighter through the NDSA. SDA works in partnership with these organizations to potentially transition their technologies into further development and fielding.”<sup>100</sup> The study team was told that the Space RCO would focus on bringing technologies to Low Rate Initial Production (Milestone C) while SDA is focused on fielding relatively mature technologies.

- Milestone Decision Authorities, reviews. SDA indicated that it has its own milestone decision authority. The agency follows a mix of NASA and European Space Agency (ESA) milestones, reviews, and entry and exit criteria. Reviews such as SRRs, TRRs, and PDRs from the ESA-model require that all documentation be submitted ahead of time for decision-making.
- Documentation. The study team was told that SDA is following a mix of NASA/ESA entry and exit criteria. Contractors are assumed to have performed technology readiness assessments when bidding on the fixed price contracts SDA uses.
- Requirements. The study team was told that the requirements come from a warfighter council consisting primarily of COCOMs. With a spiral two-year development cycle, the focus is on the minimum viable product (i.e., improvement in capability) for the next tranche of satellites. Priorities are ranked by the council. SDA indicated that its tracking layer has a JCIDS validated requirement, but instead of trying to meet its goals in one program, it will use a spiral up/incremental approach meeting some but not all in each tranche.
- Contracts. Fixed price with milestone payouts for delivery.

The SDA has a focus to rapidly field a resilient proliferated low earth orbit constellation of satellites providing a variety of capabilities with a relatively short life span (five years with two-year spiral increments). It appears to rely heavily on fixed price contracts to field mature technologies.

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<sup>100</sup> Space Development Agency website, <https://www.sda.mil/home/about-us/>, Accessed 15 December 2020.

## **G. Assessment: Should MDA transition to DoD 5000?**

The main objective of this acquisition assessment is to examine whether MDA should move to the standard DoD instruction 5000 acquisition process, and, in particular, to identify both the risks and benefits of making such a transition. Our analysis is qualitative due to the lack of data-supported conclusions regarding program outcomes between the two oversight approaches. This section presents a list of potential benefits and risks of transition.

### **1. Potential Benefits of Transition to DoD 5000**

#### **a. Established process, understood by Services**

Various versions of DoD 5000 have been in place since the early 1970s, and the basic principles of review and oversight incorporated in them are well understood by the Services and throughout the department.

Aligning processes may provide for easier transition of programs to the Services that will operate them. An existing agreement between the Navy (operating largely under 5000) and MDA contains a reciprocity section that mentions the need to “respect and accept each other’s program milestones, testing and certifications and minimize or avoid redundant efforts” as a result of different authorities, different acquisition processes, and increased integration of systems and capabilities.<sup>101</sup> If MDA were transitioned to DoD 5000, coordinating acquisition activities between it and the Services would be straightforward and such agreements would not be necessary.

A body of work and support systems have developed around DoD 5000, including the Defense Acquisition University and acquisition career fields in the Services. If MDA were under 5000, these available resources would be directly relevant to its activities and MDA could leverage them.

#### **b. Longstanding management principles**

DoD 5000 has evolved over the years, but some management principles endured over many iterations. While not always yielding successful programs, these principles are intended to improve the odds of acquisition program success—that is, to deliver performance and effectiveness on schedule at a reasonable cost. For example, the current instruction still includes “fly-before-buy” which, while not always fully practiced, first appeared in the original 1971 version emphasizing the importance of activities, such as prototyping and operational test and evaluation that are designed to enhance understanding of technical challenges and mitigate associated risks before making a commitment to production.

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<sup>101</sup> “Memorandum of Agreement between the United States Navy and the Missile Defense Agency providing Overarching Guidance on the Development, Testing, and Transition and Transfer of Ballistic Missile Defense Elements and Capabilities,” 13 June 2017.

As shown in Figure 3.2, DoD 5000 can include many reporting requirements and extensive reviews, which can act as “tripwires” with the potential to identify issues and risks earlier in the process. Some of the major changes in the DTM, which increase independent review and approval of MDA activities, similarly provide decision-makers with independent reviews to increase knowledge at key decision points. While MDA’s original focus was to deploy a BMD system as rapidly as possible, in recent years it has adopted many reporting and documentation requirements analogous to DoD 5000.

### **c. Tailored approaches are possible under the AAF**

Changes recently made to DoD 5000 appear to codify the flexibility that some say was always there but not often utilized. Under the AAF, there are Urgent Operational Needs and Middle Tier of Acquisition pathways that did not exist at the time of MDA’s founding. And under the Major Capabilities pathway, flexible implementation emphasizes that programs can be structured in terms of “strategies and oversight, phase content, the timing and scope of decision reviews, and decision levels based on the specifics of the product being acquired, including complexity, risk, security, and urgency to satisfy validated capability requirements” and that regulatory information will be “tailored-in,” meaning “the regulatory information that will be employed to document program plans and how that information will be formatted and provided for review by the decision authority.”<sup>102</sup>

Considering Figure 3.2 and given the flexibility of the Major Capabilities pathway, it might be possible to tailor MDA programs under DoD 5000 to provide documentation analogous to that used under the prior process or the current one under the DTM. And with delegation, it is also possible to match the milestone decision authority that the Director, MDA, had in the prior process. This would need to be requested and tailored for each program going forward, and for large technically challenging programs, decision authority, reporting, and oversight may and could be retained by USD(A&S).

## **2. Risks of Transition to DoD 5000**

### **a. “Speed of relevance” – many say 5000 takes too much time**

We were unable to draw any data-supported conclusions about differences in the cycle time of acquisition programs executed under 5000 or by MDA; however, many of the people that the study team interviewed, who worked in a variety of DoD organizations involved with acquisition and requirements, had the view that historically the standard DoD 5000 acquisition process takes too much time. Recent changes to DoD 5000 and the proliferation of rapid capability organizations in the past five years both seem to indicate that this view was widespread and prompted change. Some of the practices used by these rapid capability offices, like short, narrow reporting chains

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<sup>102</sup> Department of Defense, “DoD Instruction 5000.85, Major Capability Acquisition,” August 6, 2020.

and simplified requirements, are similar to the practices that have been used by MDA. As pointed out in the earlier section however, some of these practices may not work for all types of acquisition programs. For example, complex systems requiring substantial technology development may not be realized “faster and better” under a “rapid capability” model.

**b. Additional process and documentation which MDA does not exclusively control**

Moving to DoD 5000 would be new for MDA and would require MDA to coordinate with other offices and seek approvals, primarily of selected documentation, that are not required under the DTM. Nonetheless, the DTM has a number of provisions that depart significantly from MDA’s prior practices—such as making USD(A&S) the decision authority beginning at TDD for major programs—that are analogous to DoD 5000. MDA appears to produce a number of acquisition-related documents analogous to those required under DoD 5000, but IDA has not examined those documents and assessed the differences in content between them and their DoD 5000 analogs. A key difference relative to MDA’s pre-DTM practices under either the DTM or DoD 5000 is that MDA would no longer control both preparation and approval of documentation unless USD(A&S) delegated decision authority for major programs to the Director, MDA.

Having approval and coordination occur outside of MDA could introduce delays. The study team was told that under DoD 5000 there are numerous staff personnel who are involved in oversight and can, in effect, say “no” unless the leadership of USD(A&S) and USD(R&E) are substantively and continually engaged.<sup>103</sup> The challenge is to identify who is accountable and who gets clear decision authority. The team was also told that DoD 5000 was sometimes treated as a checklist. The possibility exists that the acquisition process may take longer with wider staff involvement.

**c. Tailoring DoD 5000 requires expertise to structure appropriate process and balance risk**

Some interviewees indicated that tailoring has always been possible under 5000, but that very few program managers did it. If it is indeed not a widespread practice, finding the right expertise to do this may be difficult. The number of people who can structure an appropriate process and balance the risk may be limited. On the other hand, the Space RCO indicated that they use a Navy tool that assists tailoring 5000-based review content consistent with program timelines. Thus, there does appear to be some expertise with tailoring available.

Some interviewees quoted senior leadership as asking “Why is no one asking to tailor acquisition strategies?” and stating that people need to be reintroduced to the concept of “if it doesn’t make sense, do don’t it.” The study team also heard that “5000 has always been tailorable, people just forgot.”

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<sup>103</sup> Staff in the Office of the Chief Information Officer (CIO) and Chief Management Officer (CMO) were also sometimes mentioned during interviews as being involved in acquisition oversight.

RAND indicates that “Leadership needs to provide support for tailoring so that Program Managers and staff do not default to the most conservative approach possible. This might also imply employment of other methods, such as actively managing risk, raising problems early, and knowing when to cancel or curtail an effort that is not working out.”<sup>104</sup>

### **3. Additional Points from Interviews**

Several additional points regarding transitioning MDA to DoD 5000 were raised in our interviews. Some individuals pointed out that changing acquisition systems will cause some short-term (and maybe longer-term) disruption, and that transition needs to have a clear risk-benefit advantage to be worthwhile. The team heard a number of views including “If it isn’t broke, don’t fix it,” “do no harm,” and “what is the outcome this would achieve?” Some asked “what problem is this trying to solve?” Some congressional staffers indicated that the question of transitioning MDA to DoD 5000 was intended to be informational, seeking particularly to understand the differences with the changes brought on by the DTM. Some interviewees seemed to feel that culture and leadership might outweigh process, pointing to successes and failures under both approaches.

Finally, some in MDA talked about how many documents they need to provide to the GAO, and how many full-time staff support external audits due to scrutiny of MDA’s non-standard acquisition process. It is possible that being under a standard DoD 5000 acquisition process may reduce some of MDA’s external reporting requirements, but it may not. In the end, IDA’s research revealed no definitive answer to the question of whether MDA should transition to DoD 5000.

## **H. Assessment: Should MDA use JCIDS?**

Requirements generation is an important step, and although not formally part of DoD 5000, the DoD instruction for major capabilities acquisition still references ICDs and CDDs from the standard JCIDS requirements process. The study team considered the question of transitioning MDA to JCIDS, since it is closely related to the question of transitioning to DoD 5000. It is important to note here that we are referring to the “JCIDS as the primary system used by the JROC and its subordinate boards to fulfill the CJCS’s statutory responsibilities in assessing joint military capabilities, and identifying, approving, and prioritizing gaps in such capabilities, to meet applicable requirements in the National Defense Strategy.”

### **1. Potential Benefits of Transition to JCIDS**

#### **a. Adjudicates multi-Service and COCOM equities**

JCIDS “provides the baseline for documentation, review, and validation of capability requirements across the Department” with sources for identifying requirements for entry into

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<sup>104</sup> Philip S. Anton, et al., 2020.

JCIDS typically being “COCOM in current operations; COCOM in planning for future operations; DoD Services and COCOMs conducting long term planning; and Science and Technology and Innovative Approaches.”<sup>105</sup> As described to the team, the current STRATCOM-led WIP processes collect all COCOM “needs” as input to MDA in a Prioritized Capabilities List (PCL), and MDA responds, sometimes after a two-year delay, with an Achievable Capabilities List (ACL) that it has incorporated or intends to incorporate into its programs. Thus, while it consults with the COCOMs, MDA decides which capabilities/requirements it will pursue. With JCIDS, there is a formal vetting process using Functional Capabilities Boards (FCBs), Joint Capabilities Boards (JCBs), and the JROC that involves all the Services and COCOMs approving requirements and assigning priorities to them. Some interviewees believed that MDA may not be in the best position to arbitrate varied COCOM needs while another thought that the JROC is a better venue for assessing all warfighting requirements and balancing priorities among them. Like DoD 5000, the JCIDS process is familiar to the Services. If MDA used JCIDS, there would be no need for a separate requirements process like the WIP. However, MDA controls the WIP but would not control JCIDS.

JCIDS is the primary system that supports the JROC, but MDA programs have in the past been reviewed by the JROC even though this process does not appear to be a standard practice.<sup>106</sup> One interviewee stated that “Requirements from Joint Staff are the best defense against detractors. No requirements questions arose about NGI [Next Generation Interceptor] after Service and Joint agreement through the JROC.”<sup>107</sup> Moving to JCIDS would formalize this process of obtaining Service and Joint agreement for MDA programs.

#### **b. Extensive reviews may identify issues earlier**

Some of the interviewees indicated that a JCIDS-type review might have caught some program issues earlier. One example cited was the Long Range Discrimination Radar (LRDR), for which some assumptions about the duty cycle differed between MDA and the Service. The interviewee felt that a formal JCIDS ICD could have identified the discrepancy sooner, even though it was eventually identified and resolved.

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<sup>105</sup> Ibid.

<sup>106</sup> Rich Abbott, “*Hill: NGI Has Flexibility In Development Cycle, Replaces Whole Interceptor*” Defense Daily. 10 March 2020. “Relatedly, Hill underscored MDA is working with Vice Chairman of the Joint Chiefs of Staff Air Force Gen. John Hyten as head of the Joint Requirements Oversight Council (JROC), which defines what a weapon must accomplish for the military services. “Now I don’t normally go through a Joint Requirements Oversight Council—but Gen. Hyten has offered—‘Hey I want to see how you’re doing on hitting your knowledge points along the way because we as a department need to understand whether or not we need to make more investment,’ Hill said.”

<sup>107</sup> MDA submitted requirements for the Next Generation Interceptor to the JROC for validation. A JROC memorandum (Next Generation Interceptor Requirements, JROCM 20-20) was issued on 18 March 2020.



**c. Establish formal relationship with Service operator sooner**

With JCIDS, an ICD is required to support the initiation of the Materiel Solutions Analysis (MSA) phase of the acquisition process. Under the DTM, MDA and the Service that will operate the system need to have a Transfer Agreement and Top Level Requirements Document coordinated with the Secretary of that Service by the Product Development Decision (PDD), the equivalent of Milestone B. JCIDS would establish a formal Service relationship sooner than under the DTM, and sooner than in the pre-DTM situation for which no formal requirements document involving a Service was required until the system was transferred.

**2. Risks of Transition to JCIDS**

**a. “Speed of relevance” – many say JCIDS takes too much time**

Most interviewees that we spoke with indicated that the JCIDS process takes too much time. There is a minimum time it takes to get an ICD and CDD through the JROC and its boards.<sup>108</sup> If MDA were to be placed under a Service (or as part of the coordination of the TLRD under the DTM), there could also be a Service requirements process that adds to the minimum time. Some requirements can come through the urgent operational needs (UON) process of JCIDS, which are adjudicated and validated on a shorter timeline, but these are intended for capabilities that can be delivered within two years. The Middle Tier of Acquisition pathway of DoD 5000 does not require JROC-approved documents, many of the rapid capability organizations state they work directly with warfighters, and the Space RCO was deliberately excluded from JCIDS by law. These alternative requirements approaches reinforce the perception that JCIDS can be lengthy.

While the JROC process is widely understood to take a long time, the team was told of potential changes that the Chairman of the Joint Chiefs of Staff is considering that could make the JCIDS process more responsive and less lengthy; however, no details were discussed. At this time we are not able to judge how long the DTM process will take to produce formal requirements (the TLRD and CUA) through staffing and coordination, and therefore cannot comment quantitatively on how much time might be saved, if any, over JCIDS.

**b. Many say JCIDS can lead to requirements “creep”**

Some interviewees indicated that the JCIDS process does not control “requirements creep,” where changes are made to requirements after a program has started development, or requirements are generated at the outset that are unaffordable or even unachievable. The CDD is required for approval by Milestone B. The GAO found that while growth in high-level requirements for programs was rare, the definition of lower-level technical requirements, which were not fully

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<sup>108</sup> 97 days for an ICD and 103 days for a CDD without any revisions. Manual for the Operation of the Joint Capabilities Integration and Development System. 31 August 2018.

developed or defined, generally began after Milestone B and often contributed to program cost and schedule increases.<sup>109</sup>

**c. Change could disrupt close and established relationships/collaboration with warfighter (WIP)**

An interviewee from one COCOM expressed satisfaction with how MDA handles requirements; felt that direct engagements with MDA are helpful and the historical relationship is good; indicated that the ability to directly liaison with MDA is important; and felt that direct warfighter interaction with MDA was responsive, agile, and flexible. They also expressed concern that, if they needed to rebuild relationships, it would impede the ability to maintain agility, flexibility, and speed. This view was not shared by all the COCOM representatives with whom we spoke.

**d. MDA would not have exclusive control of requirements**

By moving to JCIDS, MDA would no longer have exclusive control of its requirements process. Nonetheless, the DTM now requires the TLRD and CUA to be developed in coordination with USSTRATCOM, the lead Service, and other COCOMs, so MDA has already lost the exclusive control it had previously.

**e. Change could lock in requirements too early**

Through the PCL/ACL exchange, MDA has flexibility to specify requirements by deciding what is achievable. There were opinions expressed to the team that an iterative assessment of warfighter needs and achievable capabilities serves as a way to prevent early unrealistic or over-specified requirements that lead to programs being unable to meet performance goals. Developing an “80 percent solution” to requirements is another approach that relies on user willingness to forgo requirements that are not absolutely essential and to accept partial capabilities. If MDA was under JCIDS, it might lose this flexibility.

**3. Additional Points from Interviews**

The interviewees raised several additional points regarding moving MDA to JCIDS. Many interviewees thought that MDA should not use JCIDS at this time. Reasons that were given include factors that inhibit speed, agility, and flexibility. Interviewees thought that the JCIDS process is bureaucratic and oversubscribed. Some thought that the use of Key Performance Parameters can over-specify system capabilities too early in development, while some thought that setting detailed requirements would suffer from a lack of appropriate expertise at the JROC level. On the other hand, some pointed out that other complex strategic level systems use JCIDS, including nuclear weapons, and that missile defense can be prioritized appropriately within the JROC.

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<sup>109</sup> GAO-15-469, *Military Service Chiefs' Views on Acquisition*, June 2015.

## **I. Acquisition Assessment Observations**

On the primary question of whether to transition MDA to DoD 5000, the assessment revealed no definitive answer. This is partly due to uncertainty; there are changes to MDA's process brought about by the Deputy Secretary of Defense's DTM and changes in the DoD 5000 AAF for Major Capability Acquisition that make both processes fairly new and little experience exists with either. Transitioning to DoD 5000 also might involve trade-offs whose net benefit is difficult to assess. Subject to the uncertainty that tailoring 5000 and delegation allow, under the DTM, MDA no longer has exclusive control of documentation, milestones, or requirements. DoD 5000 for major programs without tailoring has more reporting and external review/approval requirements than the DTM. Tailoring DoD 5000 can allow for an agile and flexible process, but it requires expertise to appropriately manage risk. The oversight and reviews that DoD 5000 may require can provide useful "tripwires" to catch issues early, but they can also slow programs down. DoD 5000 is a well-known process in the Department, but it is sometimes approached as a checklist without implementing the principles behind the process or taking advantage of its tailorability. In general, process alone cannot ensure the acquisition of systems that meet mission effectiveness, cost, and schedule goals. Program failures can occur with any process, including DoD 5000. To definitively answer "yes" to the question of whether MDA should transition to the standard DoD 5000 acquisition process, the benefits of transition should very clearly outweigh the risks to justify the effort of altering the status quo.

The study team also considered the question of whether MDA should be brought under JCIDS, the formal DoD process for defining acquisition requirements and evaluation criteria for future defense programs. There is a widespread view among those the team interviewed that JCIDS is too slow and the nature of the threat to be countered by missile defense capabilities requires a speedy and flexible acquisition system. Therefore, it may not be appropriate at this time to move MDA under JCIDS.

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## 4. Summary

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### A. MDA's mission

MDA's authorities and responsibilities have evolved since it was established in 2002. Most recently, the Deputy Secretary of Defense issued a DTM that introduced additional oversight and reporting requirements for MDA. In addition, although MDA's main focus remains on BMD, for which it has end-to-end responsibility for developing and procuring system-of-system capabilities, over time it has been assigned additional responsibilities. For example, MDA was assigned a degree of responsibility for hypersonic missile defense and was designated as Technical Authority for theater Integrated Air and Missile Defense.

For years, MDA has programmed for production and sustaining engineering, even though that is not what was envisioned when MDA was established. MDA's budget shares are consistent with the observation that MDA is primarily focused today on developing, procuring, upgrading, and providing in-service engineering for the existing major components of the BMD system-of-systems. Although MDA has and continues to conduct S&T activities (i.e., basic research, applied research, and advanced technology development, also known as Budget Activities 1–3), S&T has not constituted a substantial share of its overall program (over the years, only approximately 1–3 percent of MDA's budget has supported Advanced Technology Development).

MDA's acquisition programs—for which the Agency budgets and often forms hybrid program offices with the Services to execute—span sensor, interceptor, C2, and communications systems. The Agency conducts the systems engineering needed to flow technical requirements (which it developed itself)<sup>110</sup> down to contract specifications and needed to integrate the operation of the systems it developed and fielded in conjunction with the COCOMs. MDA also budgets for and conducts sustaining engineering for these programs once they are deployed and operational.

### B. Organizational Assessment

The first part of this study was an assessment of the location of MDA in the DoD hierarchy. IDA examined the pros and cons of different potential parent organizations in terms of the alignment among MDA's responsibilities and the characteristics an oversight organization should have for MDA to effectively discharge its responsibilities. IDA employed three characteristics that we considered essential for a parent organization to conduct effective oversight. Specifically, the organization should have (1) responsibilities and authorities consistent with the mission of MDA,

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<sup>110</sup> Note that MDA does not specify operational requirements.

(2) leadership and staff with the requisite expertise and experience, and (3) incentives and culture consistent with objective assessment.

Regarding organizational options to consider, the congressional language specified USD(R&E), MDA's current location, USD(A&S), and other DoD officials we found might be suitable or that were suggested to us. Given that MDA is focused heavily on developing, procuring, and conducting sustaining engineering for an integrated systems-of-systems, we found that USD(A&S) would be most closely aligned with MDA's mission and responsibilities. In addition, USD(A&S) has some of the staff that formerly oversaw MDA acquisition under USD(AT&L) and has milestone approval authority for all major missile defense programs. Thus, USD(A&S) would be a good location for MDA in the DoD hierarchy. Note that, as is the case with all acquisition programs, overseeing systems engineering and developmental testing would lie with OUSD(R&E).

IDA considered other organizations in addition to USD(A&S) and USD(R&E). As a potential MDA parent organization, each of the Services lacks capabilities across the full range of missile defense responsibilities. For our detailed analysis, we considered Space Force, which has missions and associated capabilities, such as space sensors, that are important to the overarching missile defense mission. Space Force has the full range of authorities and capabilities for space-based systems, but lacks authorities and expertise for surface-based systems and activities involving other Services.

Some of the interviewees suggested that DEPSECDEF might be a good location for MDA, because this location might raise the visibility of MDA's mission to a high level in DoD. However, we found that DEPSECDEF already has high visibility into MDA's activities and already has many responsibilities and would, as a practical matter, likely delegate oversight of MDA to an Under Secretary. IDA also considered the Combatant Commands (COCOMs) as a potential parent organization, and chose USSTRATCOM to consider in detail. USSTRATCOM has the strategic deterrence mission, which is closely related to national missile defense, and has the Joint Functional Component Command for Integrated Missile Defense (JFCC IMD). Also, USSTRATCOM has no stake in any particular region, and collects the operational requirements from the regional COCOMs and prepares the Prioritized Capability List (PCL), which is part of the missile defense requirements development and prioritization efforts. However, USSTRATCOM lacks acquisition authorities and would need to be provided these authorities in law.<sup>111</sup> It also lacks acquisition expertise and would need to develop expertise overseeing complex, major programs and hire the requisite staff.

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<sup>111</sup> Note that some COCOMs have limited acquisition authorities. For example, the CDR, USSOCOM, has acquisition authorities under Title 10 U.S.C. § 167.

## C. Acquisition Assessment

The second part of the study was an assessment of transitioning MDA to the standard DoD 5000 acquisition process versus leaving MDA with its current process, specified under the recent DTM, for missile defense acquisition and technical requirements generation. Under the DTM, MDA no longer has the exclusive control of documentation, milestones, or requirements that it had under its original charter. Nevertheless, although MDA's process and DoD 5000 have similar phases and milestones, MDA would have more reporting and external review and approval requirements under DoD 5000 (for major programs) than it does under the DTM. That said, DoD 5000 is now tailorable under the AAF, and so that it could potentially be made to look more like the DTM process. Thus, given the establishment of the DTM and AAF, MDA's process is now closer to DoD 5000.

IDA examined the MDA, DoD 5000 (including AAF), and other DoD acquisition processes and then compared the processes and integrated the results to address the congressional question. This assessment included the potential risks and benefits of making such a transition. Some of the challenges we encountered included a lack of data to make meaningful quantitative comparisons among the acquisition processes, and the newness of the DEPSECDEF's DTM and the DoD 5000 AAF meant that only the written language (no practical experience) was available to evaluate. Also, a caveat to this assessment is that a program generally should aim to make an effective system within budget and on schedule, and the acquisition process is just one element of a program. Improvements to the acquisition process can help improve the success and speed of a program. But other factors, which are not within the scope of this study, can be just as important to ensuring a successful and timely program. These include but are not limited to budgeting, workforce expertise and experience, and willingness to accept operational capabilities incrementally.

IDA found both benefits and risks regarding whether MDA should transition to DoD 5000. The benefits include that DoD 5000 (1) is an established process that is well understood by the Services, (2) has longstanding management principles and extensive reviews that are intended to improve program success (in terms of performance, effectiveness, and cost), and (3) can be tailored to individual programs to better suit their needs. The risks include (1) many interviewees said that the full DoD 5000 process takes too much time, (2) additional processes and documentation may be required which MDA does not exclusively control, and (3) any tailoring requires expertise to structure an appropriate process and balance risk. In the end, our assessment does not reveal a definitive answer to this congressional question. Many of those we interviewed asked, given the DTM-defined process now in place, what problem would such a transition be trying to solve? On the other hand, others asked, given that the DTM-defined process is now closer to DoD 5000, why not transition (especially given the flexibility of the AAF)? As stated above, both the DTM and AAF are relatively new, and there is not much practical experience on how they will affect long-term acquisition outcomes. Will the DTM provide the right level of oversight? Will the tailorability of the AAF allow programs to create speedier acquisition processes? Once the

Department has significantly more experience with these processes, it could revisit the question of transitioning MDA to DoD 5000.

Under the DTM, MDA is now required to obtain early formal approval of requirements by the Services and COCOMs, but it still does not fall under the JCIDS requirement generation process. Thus, IDA also examined whether MDA should transition to the JCIDS process. The benefits of doing so include that JCIDS (1) adjudicates multi-Service and COCOM equities, (2) requires extensive reviews which may identify issues sooner, and (3) establishes formal relationships with Service operators early in the acquisition process. The risks, on the other hand, include that (1) most of the interviewees said that JCIDS takes too much time, (2) many said it can lead to requirements “creep,” (3) JCIDS can lock in requirements too early, before their viabilities are established, (4) JCIDS could disrupt MDA’s close and established relationships and collaboration with the warfighter (via the WIP), and (5) MDA would not have exclusive control of requirements. Thus, we found that MDA should not be under JCIDS at this time, an opinion shared by most of the interviewees.

Although JCIDS is “the primary system used by the JROC and its subordinate boards to fulfill the CJCS’s statutory responsibilities in assessing joint military capabilities, and identifying, approving, and prioritizing gaps in such capabilities, to meet applicable requirements in the National Defense Strategy,”<sup>112</sup> it is not the only way for the JROC to review joint military capabilities. Thus, MDA could still seek JROC endorsement through other pathways—and, importantly, pathways that are quicker than going through JCIDS. In fact, the requirements for MDA’s Next Generation Interceptor (NGI) program recently went through the JROC, and MDA Director Vice Admiral Jon A. Hill said that this “meant that I had the endorsement of all the service leads, which is incredible. And so I have that in addition to the combatant commands through our normal process.”<sup>113</sup>

## D. Conclusions

Many of the interviewees argued that the nature of the missile threats to the United States requires speed in the acquisition process to keep pace, and that special authorities could help enable that speed. The widespread view is that DoD 5000 and JCIDS are too slow.<sup>114</sup> Bureaucracy can provide useful oversight, but too much can unnecessarily slow down programs. It is crucial to note, however, that speed is not the only important criterion for programs. More generally, a program should aim to build a system within budget and on schedule that meets the threat defeat requirements. DoD often prioritizes speed, but this can sometimes hurt effectiveness and cost

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<sup>112</sup> Joint Staff, *CJCSI 5123.01H31: Charter Of The Joint Requirements Oversight Council (JROC) And Implementation Of The Joint Capabilities Integration And Development System (JCIDS)*, 31 August 2018.

<sup>113</sup> Jen Judson, “New Pentagon directive will put programs on more solid ground, says MDA boss,” *Defense News*, September 10, 2020.

<sup>114</sup> Note that most of the interviewees’ experiences with DoD 5000 were prior to the implementation of AAF.



(e.g., potentially due to limited testing, poorly-vetted requirements, or rushing the systems engineering and integration of immature technologies). Unfortunately, an acquisition process alone generally cannot ensure the production of effective systems. Program failures can and do occur with any process, including DoD 5000. The success of a program—in terms of effectiveness, cost and speed—depends critically on proper implementation. This includes having the right people in all jobs; providing the right incentives; providing sufficient resources and time; and insisting on accountability. The latter is sometimes difficult for DoD because people often move in and out of high-level positions. Indeed, this can create an incentive for people not to report problems during their tenures.

Finally, MDA is not the only organization that desires speed. Most DoD programs want to move quickly through acquisition, especially given the current level of competition with adversaries. The National Defense Strategy states “Prioritize speed of delivery, continuous adaptation, and frequent modular upgrades . . . not accept cumbersome approval chains, wasteful applications of resources in uncompetitive space, or overly risk-averse thinking.”<sup>115</sup> Toward this end, DoD is making the DoD 5000 acquisition process more flexible.<sup>116</sup> In our interviews with DoD stakeholders, we learned that diverse approaches exist around DoD that demonstrate rapid acquisition, and many rapid capabilities organizations work with simplified requirements or short approval chains (boards). In addition, Gen. John E. Hyten, Vice Chairman of the Joint Chiefs of Staff and head of the JROC, is examining ways to improve the speed of the JCIDS process.<sup>117</sup> If DoD can establish streamlined processes that provide effective oversight for acquiring systems, perhaps MDA would not need special authorities.

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<sup>115</sup> Department of Defense, *National Defense Strategy*, 2018.

<sup>116</sup> See, for example, Connie Lee, “Defense Department Wants to Expand Acquisition Framework,” *National Defense Magazine Online*, Dec. 3, 2020. <https://www.nationaldefensemagazine.org/articles/2020/12/3/defense-department-wants-to-expand-acquisition-framework>.

<sup>117</sup> See, for example, Theresa Hitchens, “Hyten Leading JROC Reform Process To Speed Decisions,” *Breaking Defense*, January 17, 2020, <https://breakingdefense.com/2020/01/hyten-leading-jroc-reform-process-to-speed-decisions/>.

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## Appendix A. List of Individuals Interviewed

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### A. OSD Customers

Mr. Kevin Fahey	Assistant Secretary of Defense for Acquisition	OSD(A&S)
Mr. James A. Faist	Director of Defense Research and Engineering for Advanced Capabilities	OSD(R&E)
Mr. Mark Spillman	Deputy Director, Capability Enablers (CE)	OSD(CAPE)

### B. Missile Defense Agency

Ms. Michelle Atkinson	Director of Operations
Ms. Laura M. DeSimone	Acting Executive Director and Director of Acquisitions
RDML Tom Druggan	Program Executive for Sea-Based Weapon Systems/Aegis BMD Missile Defense Agency
Dr. Shari Feth	Program Executive for Advanced Technology
Maj Gen Philip A. Garrant	Program Executive for Ground-based Weapon Systems
Mr. William Groves	General Counsel
Vice Admiral Jon A. Hill	Director
Mr. Kimo S. Hollingsworth	Director of Congressional Affairs
Ms. Karla Smith Jackson	Director of Contracts
Mr. Dennis Mays	Director of Engineering
BG Michael T. Morrissey	Director for Test
Col Leo Noyes "Sonny"	Asst To the Director, N&NC and SPACECOM
Mr. Keith O'Neil	Deputy Director Congressional Affairs

Mr. Richard A. Ritter	Program Executive for Sensors, Command and Control
Mr. Stafira, Stanley	Chief Architect
Mr. Tracy E. Tynan	Deputy Program Executive Ground-Based Weapon Systems

### **C. SASC/HASC Congressional Staffers**

Ms. Carolyn A. Chuhta	SASC Minority - Missile Defense	Senate Armed Services Committee – Strategic Forces
Ms. Kate Kaufer	SAC-D Majority - Missile Defense	Senate Appropriations Committee – Defense
Mr. John Lucio	SAC-D Minority - Missile Defense	Senate Appropriations Committee – Defense
Ms. Jackie Ripke	HAC-D Majority - Missile Defense	House Appropriations Committee – Defense
Mr. Jason Schmid	HASC Minority - Missile Defense	House Armed Services Committee – Strategic Forces
Ms. Leonor Tomero	Counsel - Missile Defense	House Armed Services Committee – Strategic Forces
Mr. Adam Trull	SASC Majority - Missile Defense	Senate Armed Services Committee – Strategic Forces
Ms. Maria Vastola	HASC Majority - Missile Defense	House Armed Services Committee – Strategic Forces

### **D. Other DoD/Former DoD personnel**

Vice Admiral Ronald Boxall	Director, Force Structure, Resources and Assessment, J8	U.S. Navy Joint Staff
Gen Kevin P. Chilton	Commander of U.S. Strategic Command from 2007 to 2011	USAF, Ret.
Brig Gen Pete M. Fesler	Deputy Director of Operations	NORAD (J3D)

Brig Gen Anthony W. Genatempo	Commander, Air Force Nuclear Weapons Center, and Air Force Program Executive Officer for Strategic Systems	USAF AFMC
Mr. James F. Geurts	Assistant Secretary of the Navy for Research, Development & Acquisition	U.S. Navy ASN/RD&A
Maj Gen Kevin A. Huyck	Director of Operations	U.S. NORTHCOM
Ms. Melissa Johnson	Deputy Director, Air Force Rapid Capabilities Office	USAF RCO, ASA(ALT)
Lt. Gen. Ronald Kadish	former Director, Missile Defense Agency from 1999 to 2004	Ret.
Dr. George Ka'iliwai III	Director, Resources and Assessment (J8)	USINDOPACOM
Lt. Gen. Daniel Karbler	commander of the U.S. Army Space and Missile Defense Command and Joint Functional Component Command for Integrated Missile Defense	(USASMDC) SPACECOM
Dr. Mark J. Lewis	Deputy Under Secretary of Defense for Research and Engineering and Director of Defense Research and Engineering for Modernization	DUSD (R&E)
Lt. Gen. Robert L. Marion	Principal Military Deputy to the Assistant Secretary of the Army (Acquisition, Logistics and Technology) and Director, Army Acquisition Corps	U.S. Army ASA(ALT)
Hon Katharina Mcfarland	Director	SAIC Board of Directors
Lt. Gen. Henry A. "Trey" Obering III	Former Director, Missile Defense Agency from 2004 to 2008	BAH (current)
Mr. Michael W. Roberts	Director Space Rapid Capabilities Office	SpRCO

Dr. Will Roper	Assistant Secretary of the Air Force for Acquisitions, Technology and Logistics	Air Force SAF/AQ
Dr. Robert Soofer	Deputy Assistant Secretary of Defense for Nuclear and Missile Defense Policy	OSD OUSD Policy
Mr. Robert W. Thomas, Jr.	Acting J8 Director, Capability and Resource Integration	USAF STRATCOM
Lt. Gen. L. Neil Thurgood	Director, Hypersonics, Directed Energy, Space and Rapid Acquisition	U.S. Army RCCTO
Dr. Derek M. Tournear	Director of the Space Development Agency	OSD OUSD(R&E)
Mr. Dyke Weatherington	Deputy Assistant Secretary of Defense/Information & Integration Portfolio Management	OSD(A&S)
Dr. Guy Weichenberg	Strategic, Defensive, and S&T Division	OSD(CAPE)

## **Appendix B. Acronyms and Abbreviations**

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AAF	Adaptive Acquisition Framework
ABM	Anti-Ballistic Missile
ACL	Achievable Capabilities List
AE	Acquisition Executive
AoA	Analysis of Alternatives
AS	Acquisition Strategy
AT&L	Acquisition, Technology, and Logistics
BAs	Budget Activities
BMD	Ballistic Missile Defense
BMDO	Ballistic Missile Defense Organization
BMDS	Ballistic Missile Defense System
C2	Command and Control
C2BMC	Command, Control, Battle Management and Communications
CAPE	Cost Assessment and Program Evaluation
CDD	Capabilities Development Document
CIO	Chief Information Officer
CMO	Chief Management Officer
COCOM	Combatant Command
CUA	Capability and Utility Assessment
DAE	Defense Acquisition Executive
DCAPE	Director, Cost Assessment and Program Evaluation
DEPSECDEF	Deputy Secretary of Defense
DoD	Department of Defense
DOT&E	Director, Operational Test and Evaluation
DPC	Defense Pricing and Contracting

DRRDP	Development RFP Release Decision Point
DTE&A	Developmental Test, Evaluation, and Assessments
DTM	Directive-Type Memorandum
EKV	Exo-atmospheric Kill Vehicle
ESA	European Space Agency
FCB	Functional Capabilities Board
FRP	Full-Rate Production
GAO	Government Accountability Office
GBI	Ground-Based Interceptor
GMD	Ground-based Midcourse Defense
GPALS	Global Protection Against Limited Strikes
HBTS	Hypersonic and Ballistic Tracking Space Sensor
HOE	Homing Overlay Experiment
IAMD	Integrated Air and Missile Defense
ICD	Initial Capabilities Document
ICE	Independent Cost Estimate
IDA	Institute for Defense Analyses
IDIQ	Indefinite Delivery Indefinite Quantity
IMTP	Integrated Master Test Plan
IOC	Initial Operational Capability
IPD	Initial Production Decision
IPL	Integrated Priorities List
ITRA	Independent Technical Risk Assessment
JCB	Joint Capabilities Board
JCIDS	Joint Capabilities Integration and Development System
JFCC IMD	Joint Functional Component Command for Integrated Missile Defense
JROC	Joint Requirements Oversight Council
KPP	Key Performance Parameter
KSA	Key System Attribute



LACM	Land Attack Cruise Missile
LCCE	Life Cycle Cost Estimate
LCMP	Life Cycle Management Process
LRDR	Long-Range Discrimination Radar
LRIP	Low-Rate Initial Production
LTAMDS	Lower Tier Air and Missile Defense Sensor
MCRCO	Marine Corps Rapid Capabilities Office
MDA	Missile Defense Agency
MDAP	Major Defense Acquisition Programs
MDD	Materiel Development Decision
MDEB	Missile Defense Executive Board
MDID	Milestone Document Identification Tool
MDR	Missile Defense Review
MDS	Missile Defense System
MS	Milestone
MSA	Material Solutions Analysis
MTA	Middle Tier of Acquisition
NDAA	National Defense Authorization Act
NGI	Next-Generation Interceptor
NMD	National Missile Defense
NRO	National Reconnaissance Office
OA	Oversight Authority
OFSC	Operational Forces Standing Committee
OSD	Office of the Secretary of Defense
OTA	Operational Test Activity
PAC-3	PATRIOT Advanced Capability-3
PATRIOT	Phased Array Tracking Radar Intercept On Target
PCL	Prioritized Capabilities List
PD	Production Decision

PDD	Product Development Decision
PEO	Program Executive Office
POM	Program Objective Memorandum
PRRDP	Production RFP Release Decision Point
PSA	Principal Staff Assistant
PSS	Program Support Strategy
RCO	Rapid Capability Organization
RDT&E	Research, Development, Test, and Evaluation
RFP	Request for Proposal
RKV	Redesigned Kill Vehicle
S&T	Science and Technology
SAE	Service Acquisition Executive
SBIRS	Space-based Infrared System
SBX-1	Sea-Based X-band Radar
SDI	Strategic Defense Initiative
SDIO	Strategic Defense Initiative Organization
SDS	Strategic Defense System
SE&I	Systems Engineering and Integration
SECDEF	Secretary of Defense
SM	Standard Missile
SoS	System-of-System
SRG	Senior Review Group
TA	Transfer Agreement
TDD	Technology Development Decision
TEMP	Test and Evaluation Master Plan
THAAD	Theater High Altitude Area Defense
TLRD	Top-Level Requirements Document
TMD	Theater Missile Defense
UEWR	Upgraded Early Warning Radar

UON	Urgent Operational Need
USASDC	U.S. Army Strategic Defense Command
USD (A&S)	Under Secretary for Acquisition and Sustainment
USD (R&E)	Under Secretary for Research and Engineering
USD(A&T)	Under Secretary of Defense for Acquisition and Technology
USD(AT&L)	Under Secretary of Defense (Acquisition, Technology, and Logistics)
VCJCS	Vice Chairman of the Joint Chiefs of Staff
WIP	Warfighter Involvement Process

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