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DOD Weapon Systems Acquisition Progress and Challenges on GAO's High Risk List

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Abstract

GAO is in the process of updating its High Risk List, coinciding with the start of the 118th Congress in 2023. DOD weapon systems acquisition has been on the High Risk List since 1990, with progress ratings for this area remaining largely unchanged. For the 2023 update of the High Risk List, in recognition of the increasingly complex acquisition environment, GAO divided the overall high-risk area into four segments—acquisition policy and oversight, software and cybersecurity, defense industrial base, and innovation investments—that reflect key areas of risk for DOD weapon systems acquisition. This presentation will focus on DOD's progress in addressing these four segments, while also offering broader observations on DOD's historical progress over the past 33 years on this high-risk area. The presentation will draw on GAO's broad body of work in DOD weapon systems acquisition, including on acquisition policy, emerging technologies, software and cybersecurity, defense industrial base, and drill downs of individual weapon systems. This presentation will cover DOD's accomplishments to date, as well as further efforts needed by DOD and Congress to address GAO's High Risk List criteria.

Why Area Is High Risk

DOD is continually challenged to rapidly deliver capabilities to its warfighters in an increasingly innovative and ever-changing global environment. Further, DOD programs are more software driven than ever before and face global cybersecurity threats. As of December 2021, DOD expected to spend more than \$1.9 trillion dollars to acquire weapon systems. It identified the modernization of its weapon systems as critical to the nation's ability to achieve competitive advantage with potential adversaries. Legislation, such as acquisition reforms outlined in the National Defense Authorization Acts for Fiscal Years 2016 and 2017, has prompted DOD to take actions to improve the outcomes of systems that were consistently costing more, taking longer to develop, and performing at lower-than-anticipated levels. We added this area to our High-Risk List in 1990.

Since our 2021 High-Risk Report, our assessment of DOD's performance against our five criteria remains unchanged. For this report, we divided the overall high-risk area into four segments—acquisition policy and oversight, software and cybersecurity, defense industrial base, and innovation investments—that reflect key areas of risk for DOD weapon systems acquisition. Since these are new segments, we will not rate DOD on them separately until our next High-Risk Report in 2025.

Leadership commitment: met. DOD senior leadership continues to demonstrate a strong commitment to improving the management of its weapon systems acquisition. For example, in May 2021, the Deputy Secretary of Defense took action to address portfolio management challenges we identified in August 2015 by establishing Integrated Acquisition Portfolio Reviews. These reviews examine how multiple weapon systems fit into a broader portfolio of capabilities. Additionally, the Office of the Under Secretary of Defense for Acquisition and Sustainment and military department leadership continue to update acquisition policies and develop oversight plans since our last High-Risk Report in 2021.

Capacity: partially met. Since our 2021 report, DOD has taken steps to increase its capacity for addressing risks related to weapon systems acquisition. For example, in



November 2021, DOD established the Software Modernization Senior Steering Group. This group coordinates DOD's software modernization efforts and promotes the adoption of modern software development practices across the department. The Under Secretary of Defense for Acquisition and Sustainment, the Under Secretary of Defense for Research and Engineering, and the DOD Chief Information Officer oversee the group.

However, DOD still needs people with the necessary expertise and sufficient resources to improve weapon systems acquisition. For example, in February 2022, we reported that officials from the Office of the Under Secretary of Defense for Acquisition and Sustainment told us they had no dedicated funding for efforts to improve acquisition reporting. They also said that the office responsible had recently been directed to cut its staffing levels. Further, DOD faced reduced capacity among its leadership while awaiting the confirmation of a new Under Secretary of Defense for Acquisition and Sustainment, which occurred more than a year after the 2021 change in presidential administration.

Action plan: partially met. DOD continues to make progress in developing plans to improve certain aspects of weapon systems acquisition. For example, in February 2022, the Acting Assistant Secretary of Defense for Acquisition approved a plan explaining how DOD would assess the effects of recent acquisition reforms, as we recommended in June 2019. However, the department has yet to develop plans to address other aspects of this high-risk area. We reported in July 2022 that the department had yet to develop a consolidated and comprehensive strategy to mitigate industrial base risks such as reliance on foreign and single-source suppliers for critical materials.

Monitoring: partially met. DOD has made progress in its efforts to conduct data-driven oversight on the effectiveness of defense acquisition system changes. In February 2022, we reported on the Office of the Under Secretary of Defense for Acquisition and Sustainment's multiyear effort to improve acquisition data management. While officials from that office described these efforts as significant, we continue to identify challenges with the data available to DOD for effectively monitoring recent acquisition reforms. For example, in February 2023, we reported that DOD's ability to conduct effective data-driven oversight of its middle tier of acquisition pathway was hindered by a lack of clear reporting guidance and a data framework that obscured key program details. These challenges were compounded by inaccurate data provided by DOD components. An acquisition pathway allows for the rapid prototyping or fielding of capabilities.

Demonstrated progress: partially met. DOD continues to work to implement our past recommendations to help address the high-risk area. For example, in 2021 and 2022, DOD addressed recommendations through actions such as monitoring costs for programs using new acquisition pathways, developing policies and guidance to increase planning for weapon systems sustainment during the acquisition process, and improving software development for its costliest weapon program, the F-35.

However, DOD has yet to address many of our other recommendations that could help improve cost, schedule, and performance outcomes. Additionally, in our June 2022 annual weapon systems assessment, we were unable to assess DOD's progress in reducing unplanned cost growth due to the lack of available data. We noted in our report that DOD still struggled with schedule delays despite congressional legislation and departmental efforts in recent years emphasizing the timely delivery of warfighting capabilities.


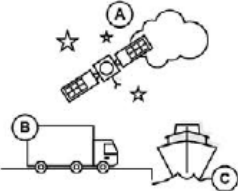
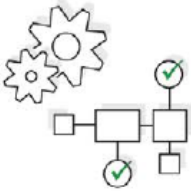

The following sections discuss the four segments related to the overall high-risk area of DOD Weapon Systems Acquisition.



Acquisition Policy and Oversight

DOD has yet to implement some of the improvements to its acquisition policies that we have identified. For example, in March 2022, we found that DOD’s acquisition policies incorporate some leading principles that private sector companies use to drive innovation and speed in product development. These principles include developing cost, schedule, and performance parameters to define goals before allocating funding. However, DOD missed opportunities for positive outcomes by not addressing others. We recommended—and DOD agreed—that the department update its acquisition policies to fully address leading principles.

Further, DOD has yet to fully determine key program oversight aspects for the Adaptive Acquisition Framework. This framework provides six acquisition pathways that are each tailored for the unique characteristics and risk profile of the capability being acquired. As a result, Congress and senior DOD leadership may lack the information they need to ensure the department’s acquisition efforts are on track. For example, in February 2023, we found that DOD components had yet to establish and document processes that DOD directed them to develop to inform execution and oversight of DOD’s middle tier of acquisition pathway. Additionally, in February 2022, we reported that many open questions remained about how DOD would track and report on program performance. We made recommendations to strengthen DOD’s efforts to improve acquisition program reporting (see figure 1).

What information to report	What criteria to use for selecting acquisition efforts to report	How to improve reporting timeliness	How to provide congressional access
 <ul style="list-style-type: none"> • Data elements • Performance metrics 	 <ul style="list-style-type: none"> • Cost thresholds • Adaptive Acquisition Framework pathways 	 <ul style="list-style-type: none"> • Reporting frequency • Automation of data reporting 	 <ul style="list-style-type: none"> • Access to web-based system • How many users will need access

Source: GAO analysis of Department of Defense (DOD) documentation and interviews with DOD officials. | GAO-23-106203

Figure 1. The Department of Defense Has Yet to Address Open Questions Related to Its Proposed Reporting Approach

Software Development and Cyber Cybersecurity

Cyberattacks can target any weapon system that depends on software. Software has become a key component of weapon systems. Yet DOD has been challenged to modernize its software development approach, address workforce shortfalls, and improve cybersecurity—a fact that senior DOD leadership has acknowledged. In June 2022, we reviewed 59 DOD acquisition programs. We found that these programs had made limited progress in implementing software development practices recommended by the Defense Science Board in 2018. Such practices include providing training in modern software



development approaches for program managers and staff. These programs also reported continued software development workforce challenges. Nearly half of the programs said it is difficult to find staff with the required expertise. More than one-third reported difficulty hiring staff in time to perform planned work.

Further, the programs we reviewed have not fully implemented recommended cybersecurity practices. For example, they did not consistently complete certain types of testing that assess a system's ability to execute critical missions and defend against cyber threats. In addition, in March 2021, we found that programs did not always include complete cybersecurity requirements in their contracts. We also found that DOD's related guidance was insufficient, increasing the potential for cybersecurity risks.

Defense Industrial Base

DOD recognizes it needs a healthy defense industrial base with secure supply chains, skilled workers, robust competition, and access to innovative, cutting-edge technology to keep pace with strategic competitors. Without these elements, DOD programs could face acquisition cost overruns, schedule delays, and performance issues. For example, we reported in January 2021 that the Navy's submarine programs rely on materials produced by an atrophied supplier base. We also found that risks in the supplier base contributed to schedule and quality challenges for the lead Columbia class submarine.

Congress has recently taken steps that help DOD address these challenges, such as providing funds that the Navy used to expand and develop the submarine supplier base. As of May 2021, the Navy's submarine programs had budgeted nearly \$900 million to address suppliers' capacity and workforce risks and to develop additional sources of supply. However, in July 2022, we found that DOD did not have enterprise-wide performance measures to monitor the aggregate effectiveness of its numerous risk mitigation efforts, which cost billions of dollars.

We also reported that DOD's Industrial Base Policy office does not have a consolidated and comprehensive strategy to mitigate industrial base risks. For example, we found that DOD had yet to develop an analytical framework for mitigating risks. Such a framework could support its planning efforts and was required by Congress. We also recommended in June 2022 that DOD update its industrial base assessment instruction. Such a move would ensure that DOD has greater insight into industrial base risks across the department.

Innovation Investments

Responding to threats from strategic competitors, such as China and Russia, requires DOD to invest in innovative technologies for the warfighter. DOD, however, faces challenges in delivering such innovation quickly. The department typically focuses on developing near-term, less risky, incremental innovation at the expense of long-term, disruptive innovation. DOD did not concur with our recommendations and has yet to implement our priority recommendations from June 2017 to (1) define the desired mix of incremental and disruptive innovation investments within military departments, and (2) annually assess whether that mix is achieved to better align with leading commercial companies' approaches to innovative technology development.

In addition, in March 2021 and June 2022, we identified gaps in DOD's leadership and oversight of innovative investments in hypersonic missiles. We also found that DOD lacked the workforce needed to support large-scale production and testing of hypersonic weapons. Further, in April 2022, we found that DOD's prototyping plan for uncrewed



maritime systems lacked key strategies to successfully transition the efforts to acquisition programs and help maximize its significant investments.

What Remains to Be Done

As of February 2023, 163 recommendations related to DOD weapon systems acquisition remain open, including that DOD should

- update DOD acquisition policies to fully implement the key product development principles used by leading companies;
- develop and use performance measures to monitor the aggregate effectiveness of mitigation efforts for DOD-wide industrial base risks; and
- define the desired mix of incremental and disruptive innovation investments within military departments and annually assess whether that mix is achieved.

Congressional Actions Needed

There are two open recommendations for congressional consideration. To help DOD improve weapon systems acquisition, Congress should consider

- requiring DOD to report on each major acquisition program's systems engineering status in the department's annual budget request, beginning with the budget requesting funds to start development; and
- revising Section 224(d) of the National Defense Authorization Act for Fiscal Year 2017, Pub. L. No. 114-328, to extend DOD's reporting requirement for Block 4 of the F-35 program until all Block 4 capabilities are fielded to ensure that Congress is aware of cost and schedule growth beyond 2023.

Benefits

Progress in the acquisition of DOD weapon systems has led to more than \$250 billion in financial benefits and more than 400 other benefits. For example:

- DOD implemented the Weapons Systems Acquisition Reform Act of 2009, which codified a number of leading acquisition practices we first recommended, to avoid an estimated \$36 billion in development costs and \$136 billion in procurement costs over 5-year periods.
- DOD established a plan, approved in February 2022, to assess the effects of recent acquisition reform efforts. Our work found that, without such a plan, DOD risked not achieving an effective balance between oversight and accountability and efficient program management.
- In March 2022, the U.S. Army issued guidance for acquisition programs on how to incorporate tailored weapon systems cybersecurity requirements, acceptance criteria, and verification processes into contracts.
- DOD updated guidance in July 2022 to provide more useful information about the total cost of warfighting capabilities that use multiple efforts or acquisition pathways.





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