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Weapon Systems Annual Assessment: DoD Leaders Should Ensure That Newer Programs Are Structured for Speed and Innovation

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Weapon Systems Annual Assessment: DoD Leaders Should Ensure That Newer Programs Are Structured for Speed and Innovation

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Abstract

Despite recent reforms, the Department of Defense (DOD) remains plagued by escalating costs, prolonged development cycles, and structural inefficiencies that impede its ability to acquire and deploy innovative technologies with speed. GAO found that DOD plans to invest nearly $2.4 trillion to develop and acquire its costliest weapon programs. Yet the average expected time for major defense acquisition programs to provide the warfighter with even an initial capability is almost 12 years from the program's start—a time frame incompatible with meeting emerging threats. DOD remains deeply entrenched in a traditional linear acquisition structure--characterized by rigid, sequential processes—that has proven inadequate in adapting to evolving threats and integrating emerging innovation. In a linear acquisition, the cost, schedule, and performance baselines are fixed early. Thus, programs develop weapon systems to meet fixed requirements that were set years in advance. This approach risks delivering a system—sometimes decades later—that is already obsolete. In contrast, leading companies use iterative cycles to design, validate, and deliver complex products with speed. Activities in these iterative cycles often overlap as the design undergoes continuous user engagement and testing, which allows the product to get to market quickly. This presentation discusses findings from GAO's 23rd annual weapon system assessment, including characteristics and performance of 106 of DOD's costliest weapon programs and findings from selected programs' implementation of leading practices for product development, as well as modern software and cybersecurity practices.

Background

The DoD plans to invest nearly $2.4 trillion to develop and acquire its costliest weapon programs, but it continues to struggle with delivering timely and effective solutions to the warfighter. Weapon systems are more complex and software-driven than ever before. The DoD implemented recent reforms intended to lead to faster results, but slow, linear development approaches persist.

This report, the GAO's 23rd annual assessment, responds to a provision Congress included in statute for the GAO to annually review selected DoD acquisition programs and efforts. It assesses the characteristics and performance of 106 of the DoD's costliest weapon programs. It further assesses selected programs for schedule performance, implementation of leading practices for product development, and approach to software development and cybersecurity practices.

DoD Plans to Invest Nearly $2.4 trillion in Its Weapon Portfolio

The weapon systems portfolio we assessed continues to grow both in cost and number of programs. It consists of 106 programs: 79 major defense acquisition programs (MDAPs), 20 middle-tier of acquisition (MTA) programs, and seven future major weapon acquisitions not

currently on an adaptive acquisition framework (AAF) pathway. The following sections provide an overview of the DoD's MDAP and MTA program portfolios.

DOD MDAP Portfolio

MDAP Cost. The estimated cost change of programs that were also in the DoD's prior-year MDAP portfolio increased by $119.9 billion. Among the 76 MDAPs for which cost data was available, half of the programs (38 of 76) reported cost increases totaling $133.4 billion. The DoD plans to invest $792.2 billion to develop and produce the subset of 36 MDAPs that, as of January 2025, were generally between the start of development and the early stages of production—over a third of the DoD's total estimated MDAP costs. Combined total estimates increased by $49.3 billion for 30 MDAPs also included in the prior year's report. The Air Force's Sentinel missile program accounted for over $36 billion (73%) of this increase.

MDAP Schedule. The expected time for MDAPs in the DoD's portfolio to provide an initial capability is almost 12 years from the program's start—an average that includes MDAPs that began as MTAs. Since our prior-year report, six programs in our review delayed their expected initial operational capability (IOC) by 12 months or more. These six programs have also reported delays previously. Among the 30 MDAPs overall that have yet to achieve IOC, 24 have delayed their expected time frames since first full estimate.

DOD MTA Portfolio

MTA Cost. The DoD plans to invest at least $44.5 billion across 20 of its largest MTA programs. Combined costs for 14 MTA programs included in both this report and the prior year's assessment trended up slightly by $748 million (3%). MTA costs include ongoing efforts only and do not include any further investments the DoD may make to develop or acquire a capability after the current MTA effort concludes.

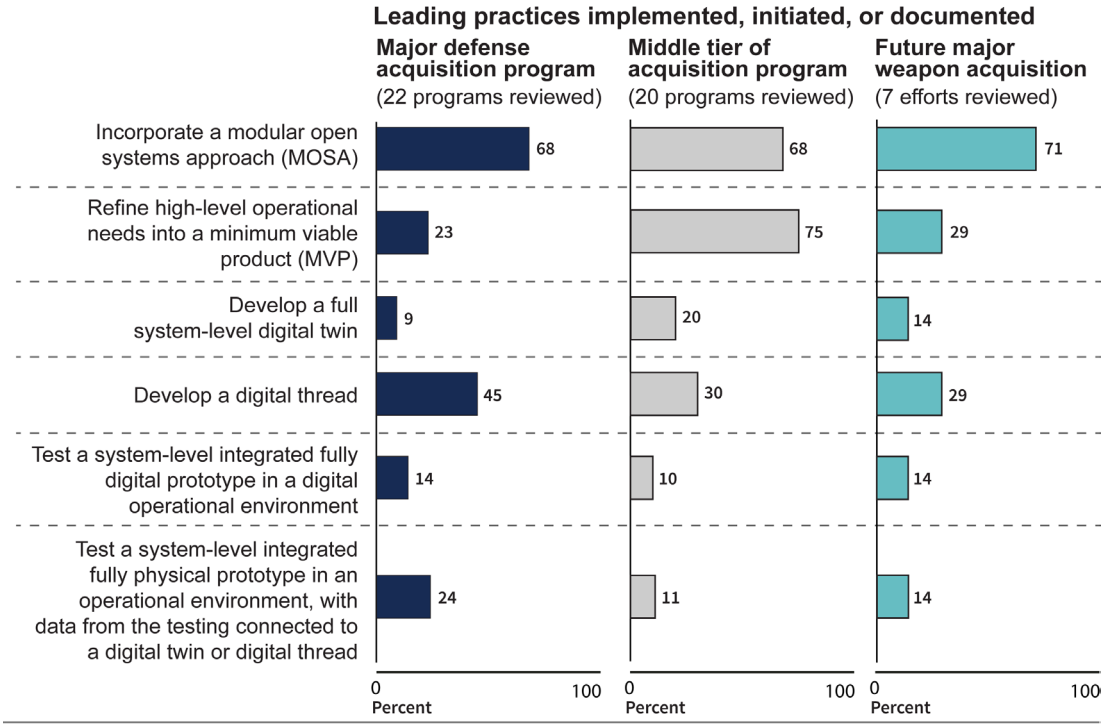
MTA Technology Development. MTA programs that initiated with immature critical technologies reported limited development progress. The 10 MTA programs with critical technologies that we reviewed in both this report and the prior year's assessments varied in their progress toward maturing them. Several programs that initiated with immature technologies still need significant work before reaching the end of their MTA effort and delivering initial capability.

MTA Schedule. MTA programs reported a wide range of time frames for delivering initial capabilities. We found that more programs are planning to transition to the MCA pathway at production start, operations and sustainment, or to an MTA rapid fielding effort than in prior years. However, of the 15 programs that reported plans to achieve an IOC, six programs still plan for further development for multiple years after ending the current MTA efforts before delivering capability.

Programs Are Missing Opportunities to Deliver Capability With Speed

Opportunities exist for future major weapon acquisitions that have yet to start on an adaptive acquisition pathway to leverage leading practices during the earliest stages of the program—before they become locked into rigid requirements, budgets, and development approaches. These future programs reported that they intended to incorporate leading practices generally at levels at or below the levels reported by current MDAPs or MTAs. This is because decision-makers in the DoD and across the military services do not take steps to ensure that future programs include leading practices (discussed below). Incorporating leading practices prior to formally starting a new program can help programs take full advantage of the efficiencies they provide.

Most programs the GAO reviewed do not fully implement leading practices in concert to achieve efficiencies (Figure 1). For example, most programs reported using a modular open systems approach—generally required by statute—which allows them to easily add or replace weapon parts over time. Few, however, reported plans to establish a minimum viable product (an initial set of capabilities that can be iterated upon), use digital twinning (a virtual representation of a physical product), or use digital threads (real-time data to inform decision-making). These practices are most effective when they are used together as part of an iterative approach to product development.



Source: GAO analysis of programs' questionnaire responses. | GAO-25-107569

Most programs we reviewed do not fully implement leading practices, including future efforts that are newer and have opportunities to do so we are recommending that the DoD leadership take steps to ensure that future major weapon acquisition programs include leading practices for product development during the earliest stages of the programs. The DoD concurred with the recommendations.

This is an excerpt from a full-length report. See GAO-25-107569 for additional details, including additional report contributors: gao.gov/products/gao-25-107569 (report landing page); gao.gov/assets/gao-25-107569.pdf (PDF of report).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