GAO Highlights

WEAPON SYSTEMS ACQUISITION

DOD Needs Better Planning to Attain Benefits of Modular Open Systems

Why GAO Did This Study

A MOSA enables weapon programs to better respond to changing threats by allowing them to replace components more easily. Further, a MOSA can help address concerns like high weapon system sustainment costs that GAO has reported on.

House and Senate reports include provisions for GAO to review DOD's use of MOSAs. This report assesses the extent to which (1) programs implemented MOSAs and why; (2) programs and portfolios planned for MOSAs; (3) the military departments invested in necessary resources for MOSAs; and (4) DOD developed policy, regulations, and guidance for MOSAs.

GAO reviewed planning documents for 20 acquisition programs that started after relevant laws were passed in 2016. GAO selected the programs based on their acquisition approach and military service. GAO also reviewed policy and guidance documents and interviewed DOD and military department officials.

What GAO Recommends

GAO is making 14 recommendations to DOD, including that it develop a process to analyze MOSA costs and benefits; improve military department processes for ensuring quality MOSA planning documents and for coordinating MOSA implementation across programs; and address gaps in MOSA policy and guidance. DOD concurred with these recommendations.

What GAO Found

A modular open systems approach (MOSA) is a strategy that can help the Department of Defense (DOD) design weapon systems that take less time and money to sustain and upgrade. Recent legislation requires acquisition programs to implement a MOSA to the maximum extent practicable. GAO found that 14 of the 20 programs it reviewed reported implementing a MOSA to at least some extent. Other programs cited barriers to doing so, such as added cost and time to conduct related design work. While a MOSA has potential benefits, it may also require programs to conduct additional planning, such as to ensure they address cybersecurity aspects related to a MOSA.

Potential Benefits of a Modular Open Systems Approach
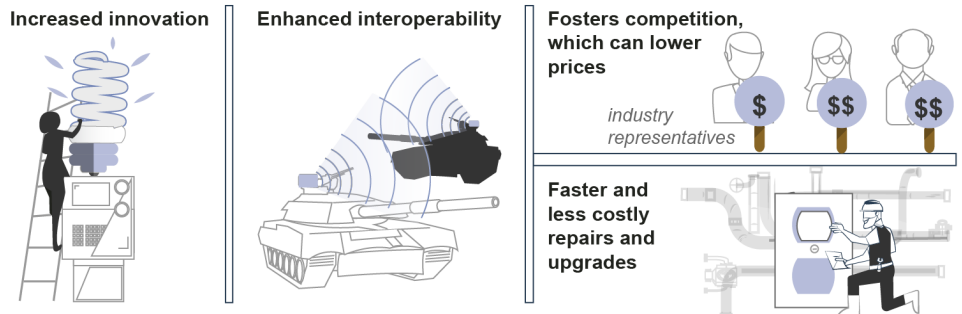
Source: GAO analysis of Department of Defense and industry data. | GAO-25-106931

However, none of the 20 programs GAO reviewed conducted a formal analysis of costs and benefits for a MOSA because DOD's policy does not explicitly require one. As GAO reported in March 2020, program officials often focus on reducing acquisition time and costs. Unless required to consider the costs and benefits of a MOSA, officials may overlook long-term MOSA benefits.

Further, most programs did not address all key MOSA planning elements in acquisition documents, in part, because the military departments did not take effective steps to ensure they did so. As a result, programs may not be well-positioned to integrate a MOSA into key investment decisions early in the life of the program. Also, DOD's process for coordinating MOSAs across portfolios does not ensure the level of collaboration needed to achieve potential benefits such as lower costs from using common components across programs.

The military departments are statutorily required to ensure availability of certain resources and expertise related to MOSA implementation. However, they have yet to assess their departments' MOSA needs or determine how resources should be aligned across their respective departments. Until they do this, programs risk having insufficient resources and expertise to achieve the potential benefits of a MOSA.

DOD has updated some acquisition and engineering policies and is drafting regulations and guidance to address MOSAs. But gaps remain that could hinder MOSA implementation. For example, DOD policy does not address how MOSA requirements apply to programs using the middle tier of acquisition pathway—those intending to complete rapid prototyping or fielding in 5 years or less.

_____ **United States Government Accountability Office**