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Washington, DC 20548

June 15, 2026

The Honorable Roger Wicker  
Chairman  
The Honorable Jack Reed  
Ranking Member  
Committee on Armed Services  
United States Senate

The Honorable Mike Rogers  
Chairman  
The Honorable Adam Smith  
Ranking Member  
Committee on Armed Services  
House of Representatives

**Robotic Autonomous Systems: Navy Needs to Address Leadership and Organizational Challenges to Meet Urgent Needs**

Recent conflicts in Ukraine and the Middle East prove that robotic and autonomous systems (RAS) are disrupting naval warfare and challenging traditional naval superiority. To provide more adaptable, distributed operations, the Navy intends to shift away from its World War II-era operating model, which was based on closely knit battle groups comprised of several traditional platforms, such as planes, ships, and submarines.<sup>1</sup>

According to Navy strategic documents, a hybrid fleet is necessary to enable this shift and would incorporate smaller, more numerous, and distributed capabilities—including RAS capabilities—as a complement to larger, more individually powerful, traditional capabilities.<sup>2</sup> In this context, RAS capabilities could allow naval forces to take on greater operational risk while maintaining a tactical and strategic advantage. RAS in all warfighting domains—including air, surface, and undersea—are crucial to this shift.

Acquiring multi-domain RAS presents challenges for the Navy. RAS fundamentally differ from the Navy’s traditional platforms and have different criteria for design and development than traditional platforms. For example, RAS depend on new enabling technologies to operate such as advanced sensor and control systems, artificial intelligence, and machine-learning software.

<sup>1</sup>A traditional battle group, or carrier strike group, typically consists of an aircraft carrier and its embarked air wing, a guided-missile cruiser, multiple guided-missile destroyers, and a supply ship, and at times, one or more submarines.

<sup>2</sup>Department of the Navy, Unmanned Campaign Framework, (Mar. 16, 2021); Department of the Navy, Chief of Naval Operations (CNO), Navigation Plan 2022 (July 26, 2022); Department of the Navy, Chief of Naval Operations (CNO), Fighting Instructions, (Feb. 9, 2026).

The Navy plans to spend billions of dollars on researching and developing enabling technologies for RAS.

A House Report accompanying a bill for the National Defense Authorization Act for Fiscal Year 2022 includes a provision for us to review the Navy's efforts to develop technologies for autonomous surface vessels and autonomous undersea vehicles.<sup>3</sup> In response to this provision, we provided information in a classified report.<sup>4</sup>

Our report addressed (1) the extent to which the Navy's current approaches to requirements, resourcing, and acquisition supported the Navy's plans for fielding RAS and enabling technologies; (2) how the Navy was experimenting with autonomous systems maritime systems and the extent to which these efforts were helping to address operational needs; and (3) whether the Navy's Acquisition Executive Agent for Autonomy was well positioned to help the Navy achieve its goals for autonomous capabilities.

To conduct this work, we reviewed the Navy's strategic plans and guidance for implementing RAS; and analyzed the Navy's current requirements, resourcing, and acquisition approaches. We conducted multiple visits to the naval warfare centers and Navy squadrons most heavily involved in developing and testing RAS in the maritime environment, including RAS in operation and prototype, and several in development. We also interviewed over 200 Department of Defense (DOD) and Navy officials with responsibilities for RAS efforts.

We conducted the work for GAO-25-106560C from January 2023 to March 2025 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusion based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

We made three recommendations to the Navy that addressed our findings and also recommended Congress consider amending a provision in the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 to help the Navy take actions.<sup>5</sup> We provided DOD with a draft of our report for review and comment in December 2024. In March 2025, the Navy provided technical comments on the draft report, which we incorporated as appropriate. The Navy orally concurred with our recommendations but did not provide a formal

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<sup>3</sup>H. Rep. No. 117-118, at 18 (2021) (accompanying H.R. 4350).

<sup>4</sup>GAO, Robotic Autonomous Systems: Navy Needs to Address Leadership and Organizational Challenges to Meet Urgent Needs, GAO-25-106560C (Washington, D.C.: Mar. 31, 2025) (SECRET//NOFORN)

<sup>5</sup>Section 218 of the William M. (Mac) Thornberry National Defense Authorization Act (NDAA) for Fiscal Year 2021 directed Secretary of the Navy to designate an existing program executive officer from within the Navy to serve as the acquisition executive agent for autonomy, as the official within the department with primary responsibility for the acquisition of autonomous technology. Pub. L. No. 116-283. After our classified report issued in March 2025, the Navy consolidated RAS acquisition under the Portfolio Acquisition Executive for Robotic Autonomous Systems later that year. In addition, the NDAA for Fiscal Year 2026 repealed section 218 of the NDAA for Fiscal Year 2021. Pub. L. No. 119-60, § 811(b) (2025). It also defined a portfolio acquisition executive as the senior acquisition official designated by the component acquisition executive or service acquisition executive of the military department concerned, as applicable, to lead a portfolio of capabilities, with authority for plans, budgets, and execution of programs assigned to the portfolio, including life-cycle management. Pub. L. No. 119-60, § 1802(a) (codified at 10 U.S.C. § 1732).

comment letter. However, the Navy has since taken some actions that may address our recommendations as part of recent organizational changes.

The enclosure to this letter summarizes our findings and recommendations from the March 2025 classified report and omits classified information related to specific details about the Navy's strategic plans, RAS, and enabling technologies. We worked with DOD from March 2026 to June 2026 to prepare this unclassified version of the original classified report for public release. This public version was also prepared in accordance with generally accepted government auditing standards.

Sincerely yours,

**//SIGNED//**

Shelby S. Oakley  
Director, Contracting and National Security Acquisitions

Enclosure(s) – 1



## Robotic Autonomous Systems: Navy Needs to Address Leadership and Organizational Challenges to Meet Urgent Needs

GAO-26-109014 · June 2026

The Navy has been researching and developing robotic autonomous systems (RAS) for several decades, with limited success transitioning these efforts into acquisition programs. In a prior report, we recommended ways for the Navy to address challenges to developing and fielding RAS with speed. Without rapid action from Navy senior leaders, the Navy risks not meeting the fleet’s urgent needs.

### The Big Picture

Navy strategic documents state a hybrid fleet—comprising traditional ships, submarines, and various RAS, including large autonomous surface and undersea vessels and small, rapidly adaptable, and expendable RAS—is necessary to enable distributed operations. Navy leadership identifies capabilities enabling multi-domain RAS, such as sensors, as critical to such a hybrid fleet, but acquiring them presents challenges for the Navy.

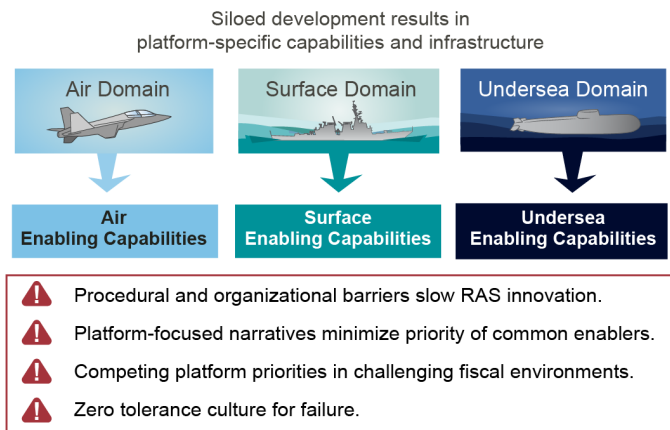
### What GAO’s Work Shows

In March 2025, we found the Navy had not addressed challenges to developing RAS capabilities despite critical needs for RAS implementation.

**Inconsistent leadership and priorities impeded RAS investments.** Inconsistent senior leadership and shifting priorities impeded the Navy’s progress establishing an organizational structure for RAS and making efficient investments to achieve goals. For over a decade, senior Navy leadership recognized the need for changes to organizational structure and processes to expedite efforts to acquire and field RAS capabilities to meet objectives. However, leadership turnover has affected the Navy’s progress in making identified changes.

Domain- and platform-centric approaches impeded RAS progress. Without consistent leadership to advocate for RAS investments, Navy organizational structure and processes for requirements, resourcing, and acquisition generally remain siloed by domain and focused on traditional platform approaches. These approaches are not well-suited for making efficient investments in RAS capabilities.

### Navy’s Existing Domain- and Platform-centric Approach and Challenges to Developing Robotic Autonomous Systems (RAS) Capabilities



Source: GAO analysis of Navy documentation; GAO (illustration). | GAO-26-109014

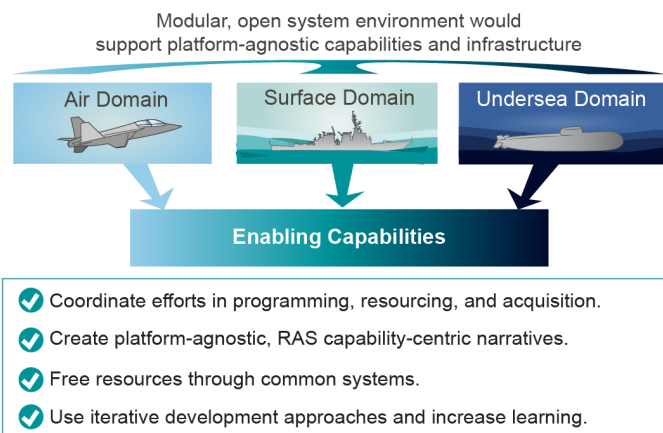
Under this approach, RAS compete for resources with traditional ships, submarines, and aircraft carriers—many of which are priority major weapons acquisition programs—leaving little funding available to develop and field RAS. RAS inherently differ from traditional platforms and require substantial investments in enabling technologies that support systems across multiple domains. A traditional focus on an individual platform may obscure the extent of the need for a specific enabling technology.

With the traditional approach, competition for funding within domains incentivizes Navy programs to focus on developing platforms with fixed requirements established at the onset. For instance, the Navy initiated its largest maritime RAS efforts—the [Large Unmanned Surface Vessel](#) and [Extra Large Unmanned Undersea Vehicle](#)—using linear development approaches, and fully defining and fixing requirements early in the acquisition process. Both programs experienced challenges that our prior work shows led to long acquisition time frames,

decreased the relevance of delivered capabilities, and prevented capabilities from evolving to address dynamic needs.

**Iterative approaches could accelerate RAS development.** Commercial companies are driving a rapid pace of RAS development that greatly outpaces traditional Navy platform development timelines. Our prior work on [leading practices](#) shows that leading companies use iterative processes to design, validate, and deliver cyber-physical products like RAS. Iterative processes enable them to build complex systems with speed and incorporate the latest technology updates. Iterative development allows companies to evolve and refine requirements based on demonstrated achievement, with development focused on user needs and feedback.

**Navy’s Desired Shift to Capability-centric Approaches and Benefits for Developing Robotic Autonomous Systems (RAS) Capabilities**



Source: GAO analysis of Navy documentation; GAO (illustration). | GAO-26-109014

In 2021, Navy leadership published the Unmanned Campaign Framework to address organizational barriers and adapt its development processes to expedite development of RAS capabilities. The Framework identified a desired shift to a capability-centric approach to RAS development that could help the Navy promote iterative development approaches in line with leading practices. However, as of March 2025, the Navy had yet to implement these changes.

**Portfolio management and formalized stakeholder roles could improve coordination.** To better position itself to get RAS capabilities to the warfighter with speed, we found the Navy needs to optimize investments in RAS and enabling technologies by managing RAS as a portfolio. Portfolio management offers the Navy an approach to develop RAS capabilities by balancing resourcing across multiple efforts and will help facilitate adopting the capability-centric and iterative approaches that commercial companies use to accelerate development.

Further, Navy officials told us a lack of formalized RAS shareholder responsibilities continued to create inefficiencies and confusion, a challenge we also reported in [2022](#). Increased experimentation with RAS is helping the Navy develop and refine concepts of operation, inform requirements, and complete analysis for future acquisitions. Better coordination of officials working on disparate RAS efforts could expedite efforts to develop enabling technologies.

**GAO Recommendations**

We made three recommendations to the Secretary of the Navy and the Chief of Naval Operations to

- determine how to organize RAS capabilities as a portfolio in a way to provide consistent leadership and meet the Navy’s objectives across warfighting domains;
- develop and implement a plan to facilitate capability-centric approaches and iterative development approaches after establishing an organizational structure of the RAS portfolio; and
- clearly identify and define the roles and responsibilities of key stakeholders for RAS and develop a stakeholder management plan.

We also included a matter for congressional consideration to help the Navy take actions related to a key stakeholder for acquiring autonomy.

In March 2025, the Navy orally concurred with our recommendations. Subsequently, the Navy has taken some actions that may address our recommendations as part of recent organizational changes.

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