



Highlights of [GAO-06-49](#), a report to the Subcommittee on Tactical Air and Land Forces, Committee on Armed Services, House of Representatives

## Why GAO Did This Study

Unmanned aircraft systems (UAS) consist of an unmanned aircraft; sensor, communications, or weapons, carried on board the aircraft, collectively referred to as payloads; and ground controls. UAS have been used successfully in recent operations, and are in increasingly high demand by U.S. forces. To meet the demand, the Department of Defense (DOD) is increasing its investment in and reliance on UAS, and often deploying them while still in development. GAO has previously found that DOD's approach to developing and fielding UAS risked interoperability problems which could undermine joint operations. GAO was asked to review (1) UAS performance in recent joint operations and (2) the soundness of DOD's approach to evaluating joint UAS operational performance.

## What GAO Recommends

We are recommending that the Secretary of Defense develop and apply appropriate joint operating standards, and include specific performance indicators and baselines for analysis and systematic information reporting and analysis procedures in the new performance measurement system under development.

In commenting on a draft of this report, DOD fully or partially concurred with GAO's recommendations.

[www.gao.gov/cgi-bin/getrpt?GAO-06-49](http://www.gao.gov/cgi-bin/getrpt?GAO-06-49).

To view the full product, including the scope and methodology, click on the link above. For more information, contact Sharon Pickup, at (202) 512-9619, or [pickups@gao.gov](mailto:pickups@gao.gov).

# UNMANNED AIRCRAFT SYSTEMS

## DOD Needs to More Effectively Promote Interoperability and Improve Performance Assessments

### What GAO Found

DOD has achieved certain operational successes using UAS, including identifying time-critical targets in Iraq and Afghanistan, and striking enemy positions to defeat opposing forces. Some missions effectively supported joint operations, and in other cases, the missions were service-specific. DOD has encountered challenges which have hampered joint operations at times. First, some UAS cannot easily transmit and receive data with other communication systems because they are not interoperable. Although DOD guidance requires interoperability, detailed standards for interoperability have not been developed; DOD has relied on existing, more general standards; and the services developed differing systems. For now, U.S. forces have developed technical patches permitting transmission but slowing data flow, potentially hampering time-critical targeting. Second, some sensor payloads cannot be interchangeably used on different UAS because DOD has not adopted a payload commonality standard. Some UAS missions may have to be delayed if compatible unmanned aircraft and payloads are not available. Based on its experience with UAS in Persian Gulf operations, U.S. Central Command believes communications interoperability and payload commonality problems occur because the services' UAS development programs have been service-specific and insufficiently attentive to joint needs. Lastly, the electromagnetic spectrum needed to control the flight of certain unmanned aircraft and to transmit data is constrained and no standard requiring the capability to change frequencies had been adopted because the problem was not foreseen. Thus, some systems cannot change to avoid congestion and consequently some missions have been delayed, potentially undermining time-critical targeting. In addition to the joint operational challenges, inclement weather can also hamper UAS operations. Unmanned aircraft are more likely to be grounded in inclement weather than manned aircraft and DOD had not decided whether to require all-weather capability. While DOD has acknowledged the need to improve UAS interoperability and address bandwidth and weather constraints, little progress has been made. Until DOD adopts and enforces interoperability and other standards, these challenges will likely remain and become more widespread as new UAS are developed and fielded.

DOD's approach to evaluating UAS joint operational performance has been unsound because it was not systematic or routine. DOD has deployed UAS before developing a joint operations performance measurement system, even though results-oriented performance measures can be used to monitor progress toward agency goals. DOD has generally relied on after-action and maintenance reports which have useful but not necessarily joint performance information. DOD has also relied on short-duration study teams for some performance information but had not established ongoing or routine reporting systems. Thus, while continuing to invest in UAS, DOD has incomplete performance information on joint operations on which to base acquisition or modification decisions. In May 2005, U.S. Strategic Command began developing joint performance measures.