Leading Practices

Agency Acquisition Policies Could Better Implement Key Product Development Principles

Why This Matters

Each year, the Departments of Defense (DOD) and Homeland Security (DHS) and the National Aeronautics and Space Administration (NASA) together invest hundreds of billions of dollars to buy stealth jets, cutters and ships, and lunar rovers, among other things, all with complex software. However, GAO's annual reviews of these agencies' major acquisitions find they often take longer and spend more money than planned to deliver capabilities to users.

Key Takeaways

Leading companies take a disciplined approach to develop innovative products that satisfy their customers' needs, and to deliver them to market on time and within planned costs. The 13 leading companies GAO interviewed perform similar activities when developing new products, such as iterative design in hardware and software development. These activities in the development process align with the four key principles that help project teams deliver innovative products to market quickly and efficiently (see figure). GAO found that the department-wide acquisition policies of DOD, DHS, and NASA implement some key product development principles. But, they have yet to fully implement others. This gap limits agencies from ensuring a consistent approach to developing and delivering products with speed and efficiency.

Leading Companies Use Four Key Principles for Product Development

Principle 1	Principle 2	Principle 3	Principle 4
Attain a sound business case that is informed by research along with collaboration with customers	Use an iterative design approach that results in minimum marketable products	Prioritize schedule by off-ramping capabilities when necessary	Collect customer feedback to inform improvements to the minimum marketable product

Source: GAO summary of company information. | GAO-22-104513

For example, leading companies focus on designing a minimum marketable product—one with the minimum capabilities needed for customers to recognize value. Leading companies also prioritize a project's schedule: they release the features most critical to the customer and will off-ramp non-critical product features—an industry term for removing them from the current release—as necessary, in order to maintain schedule. Leading companies have mechanisms to solicit and implement feedback from customers early and often throughout development to ensure the product is relevant to customer needs, among other things.

What GAO Recommends

GAO is making nine recommendations to DOD, DHS, and NASA to update acquisition policies to fully implement key principles of product development. All three agencies concurred with our recommendations.

Primary DOD, DHS, and NASA acquisition policies incorporate many aspects of the four key principles, to varying degrees. However, agencies miss opportunities for positive outcomes by not addressing some sub-principles in their policies.

- DOD's policies do not require all programs to consider off-ramping non-critical capabilities in order to achieve schedule, hindering programs' best chance of maintaining time frames.

- DHS's policies do not require all programs to utilize modern design tools during hardware and software development, limiting consistent opportunities for programs to successfully improve revisions to the design.

- NASA's policies do not include mechanisms for programs to obtain and utilize product feedback from stakeholders or end users—such as astronauts using spacecraft or the science community benefiting from NASA projects—in order to identify challenges or new features to include in subsequent projects.

GAO previously found that other factors beyond policies can affect agency outcomes, including structural differences between government and private industry. However, GAO's prior work also demonstrates that key principles from private industry can be thoughtfully applied to government acquisition to improve outcomes, even with the different cultures and incentives.

How GAO Did This Study

This report examines principles that guide leading companies' product development efforts and the extent to which primary, department-wide DOD, DHS, and NASA acquisition policies reflect the companies' key principles and result in similar outcomes. GAO identified the 13 leading product development companies based on rankings in well-recognized lists; interviewed company representatives; analyzed department-wide acquisition policies from DOD, DHS, and NASA; and interviewed agency officials. The report is the first product in a planned body of work. In future work, GAO will explore how government agencies can apply some of the key principles outlined in this report.