

GAO Highlights

Highlights of [GAO-17-309](#), a report to congressional committees

Why GAO Did This Study

DOD invests roughly \$70 billion annually in weapon system research, development, test, and evaluation, including prototyping activities. Prototyping can help reduce risk in weapon system acquisition programs by improving understanding of technologies, requirements, and proposed solutions. It can also contribute to innovation by demonstrating the value of new technologies or systems.

House Conference Report 114-102 accompanying a bill for the fiscal year 2016 National Defense Authorization Act included a provision for GAO to review how DOD’s research and development funds are used and whether this approach effectively supports activities such as prototyping. This report assesses (1) how DOD has used prototyping prior to system development on major defense acquisition programs, and (2) what steps DOD has taken to increase innovation through prototyping activities outside of major defense acquisition programs. GAO examined prototyping activities for 22 MDAPs that planned to enter system development between December 2009 and February 2016 and 7 prototyping-focused initiatives with the stated purpose of promoting innovation.

What GAO Recommends

GAO is making four recommendations, including that DOD develop a department-wide innovation strategy that includes prototyping and adopt a more strategic approach for funding prototyping efforts across DOD. DOD concurred with the recommendations and is currently working on this strategy.

View [GAO-17-309](#). For more information, contact Michael J. Sullivan at (202) 512-4841 or sullivanm@gao.gov.

WEAPON SYSTEMS

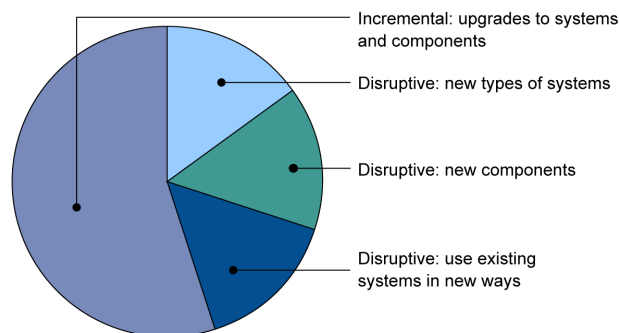
Prototyping Has Benefited Acquisition Programs, but More Can Be Done to Support Innovation Initiatives

What GAO Found

The Department of Defense (DOD) has used prototyping on its major defense acquisition programs (MDAP) primarily to reduce technical risk, investigate integration challenges, validate designs, mature technologies, and refine performance requirements. Of the 22 programs GAO reviewed, 17 used prototyping before starting system development. For many of those programs, prototyping provided information that helped introduce realism into their business cases by providing information on technology maturity, the feasibility of the design concepts, potential costs, and the achievability of planned performance requirements.

DOD has developed new initiatives that are outside of major defense acquisition programs to increase prototyping and further innovation. However, these initiatives face barriers, such as limited funding, a risk averse culture, and competing priorities. Literature on private sector innovation identifies key enablers for these types of efforts, such as developing an innovation strategy, aligning investments with innovation goals, and protecting funding for riskier projects. DOD has taken steps that are consistent with a few, but not all, of these enablers. For example, DOD does not have a department-wide strategy that communicates strategic goals and priorities and delineates roles and responsibilities to guide the prototyping initiatives. This could lead to unproductive or poorly coordinated investments later. DOD’s initiatives also face competition for funding, particularly with acquisition programs. One strategy to address funding issues called “strategic buckets” involves allocating resources to different types of projects based on an organization’s strategy (see figure). DOD has not set strategic funding targets for its initiatives. Failing to do so could prevent them from gaining traction and puts their long-term success at risk.

Notional Strategic Bucket Approach for Funding Different Prototyping and Innovation Efforts



Source: GAO. | GAO-17-309

Notes: Incremental innovation seeks to gradually improve existing products and capabilities. Disruptive innovation attempts to shift the balance of military power by providing new capabilities, potentially unforeseen by customers, such as the military services, or adversaries.