

Highlights of GAO-17-499, a report to congressional committees

## Why GAO Did This Study

DOD relies on innovative technologies to ensure the superiority of its weapon systems and planned to invest about \$12.5 billion in fiscal year 2017 to achieve this aim. Recently, DOD's leadership role in fostering innovation has been supplanted by the commercial sector. This has changed DOD's approach to technology development by relying more on commercial innovation.

Conference Report 112-329 included a provision for GAO to review DOD's S&T enterprise. This report assesses (1) the practices leading companies employ to manage technology development and (2) the extent to which DOD can incorporate these practices into its own. GAO interviewed eight large, profitable, leading technology companies (Amazon, Dow Chemical, Honeywell, General Motors, IBM, Qualcomm, Siemens AG, and Valvoline) to identify practices they used to manage, prioritize, and assess their technology portfolios. GAO also met with DOD organizations that manage and execute S&T funds to identify their practices.

## What GAO Recommends

GAO recommends that DOD annually define and assess the mix of innovation investments and define, in policy or guidance, an S&T management framework that comprehensively employs leading commercial practices. DOD did not agree with the recommendations, citing its ongoing deliberations on the new USD R&E's role, but did identify some planned actions. GAO believes its recommendations are valid as discussed in the report.

View [GAO-17-499](#). For more information, contact Mike Sullivan at (202) 512-4841 or [sullivan@gao.gov](mailto:sullivan@gao.gov).

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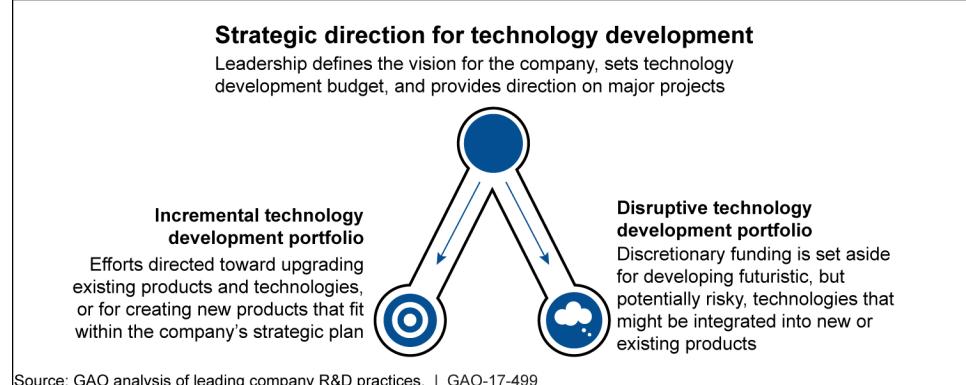
## DEFENSE SCIENCE AND TECHNOLOGY

# Adopting Best Practices Can Improve Innovation Investments and Management

## What GAO Found

The eight leading companies whose practices GAO assessed take a disciplined approach to organizing and executing their technology development activities by grouping them into two portfolios: incremental and disruptive, as shown in the figure. Incremental development improves product lines whereas disruptive development is for riskier innovative and potentially market-shifting technologies.

### Commercial Model Ensures Investments in Incremental and Disruptive Innovation



By separating these two portfolios, companies reported that they could promote existing product lines in the short term while exploring opportunities to remain competitive in the long term, and mitigate the financial risk associated with disruptive technology development. Moreover, GAO found that leading companies also ensure technologies will be relevant in the marketplace by engaging a wide range of internal stakeholders. These companies also reported that they gain leadership buy-in by prototyping technologies before committing to further development and product integration.

While some Department of Defense (DOD) practices closely mirror those of the companies GAO reviewed, DOD's ability to adopt leading commercial practices in its approach to managing science and technology (S&T) investments is limited by its funding policies and culture. Unlike the companies GAO reviewed, DOD leadership does not provide guidance on or assess the mix of incremental and disruptive innovation. As a result, officials reported that DOD labs struggle to find the right balance between these investment areas. Under DOD's budget policy, projects are planned up to 2 years in advance, which can slow innovation and limit lab directors' autonomy as compared to companies. Congress has provided a means for lab directors to initiate work outside of this lengthy process, but it has not been fully utilized. Additionally, responsibilities for technology versus product development also contribute to a culture that discourages collaboration and limits labs' ability to prototype. Yet these issues are not insurmountable, as pockets of each military department have demonstrated, such as through recent efforts to expand advanced prototyping in the labs. Further, Congress has required that by February 2018 DOD create a new Under Secretary of Defense for Research and Engineering (USD(R&E)), which will be charged with developing policies to improve innovation. This position creates an opportunity to develop policies that further promote adoption of leading commercial practices.