

GAO Highlights

Highlights of [GAO-16-185T](#), a testimony before the Subcommittee on Oversight and Investigations, Committee on Armed Services, House of Representatives

Why GAO Did This Study

DOD's ability to provide superior capabilities to the warfighter is dependent, in part, on its ability to incorporate rapidly evolving, leading-edge microelectronic devices into its defense systems, while also balancing national security concerns. In April 2015, GAO issued a report based on a House Armed Services Committee provision in a bill for the Howard P. "Buck" McKeon National Defense Authorization Act (NDAA) for Fiscal Year 2015, for GAO to review the trusted supplier program. The NDAA for Fiscal Year 2009 required DOD to develop a strategy to ensure access to trusted sources of microelectronics. In response, DOD developed its Trusted Defense Systems Strategy, which included its trusted supplier program.

GAO's testimony addresses DOD's efforts to provide access to trusted leading-edge microelectronics. This testimony is based on GAO's April 2015 report on this topic and also draws on conclusions from past work on the defense supplier base issued in October 2008; as well as the February 2005 Defense Science Board Task Force on High Performance Microchip Supply and documentation and discussions with industry and DOD officials in September and October 2015. For its April 2015 report, GAO reviewed DOD's trusted supplier program and policy guidance; interviewed DOD officials, and officials from the defense and microelectronics industry. DOD's review of this report deemed some of this information as sensitive but unclassified.

View [GAO-16-185T](#). For more information, contact Marie A. Mak, 202-512-4841, MakM@gao.gov

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TRUSTED DEFENSE MICROELECTRONICS

Future Access and Capabilities Are Uncertain

What GAO Found

In April 2015, GAO found that the Department of Defense's (DOD) access to trusted leading-edge microelectronics faced challenging consequences stemming from manufacturing costs, supply chain globalization, and market trends, creating uncertainty regarding future access about U.S.-based microelectronics sources.

- Capital costs associated with producing leading edge microelectronics increase with each new generation of technology. Leading-edge microelectronics fabrication facilities can cost several billion dollars annually and rising capital costs of manufacturing have led to increased specialization and industry consolidation.
- Once dominated by domestic sources, the supply chain for microelectronics manufacturing is a global one—primarily in Asia.
- Industry is largely focused on high-volume production driven by demand for consumer electronics. The rapidly evolving commercial microelectronics market has short life cycles, with little need to support older technologies. Conversely, DOD's needs for microelectronics are low-volume, unique, and, in some cases, for technologies for which there is no commercial demand. As a result, DOD's requirements have very little influence on the commercial market.

A decade ago, the Defense Science Board concluded that DOD had "no overall vision of its future microelectronics components needs and how to deal with them. Technology and supply problems are addressed as they arise." GAO found, in April 2015, that DOD took some efforts to address access to trusted microelectronics. For example, to address risk related to foreign sources, DOD initiated its Trusted Foundry Program (later renamed "trusted supplier program") in 2004 through an annual contract with the IBM Corporation to provide government-wide access to leading-edge microelectronics in a trusted environment. Trust is established by assessing the integrity of the people and processes used to design, generate, manufacture, and distribute national security critical microelectronics. As part of its Trusted Defense Systems Strategy, DOD expanded, through an accreditation process which includes obtaining facility and personnel security clearances, the number of trusted suppliers—which totaled 64 as of August 2014. However, none, other than IBM, offered leading-edge technologies that met DOD's needs.

In October 2014, IBM, which had been DOD's sole-source supplier for leading-edge technologies for over a decade, announced the planned transfer of its microelectronics fabrication business to GlobalFoundries—a U.S.-based, foreign-owned entity; and in July 2015, the transfer was completed. As a result, continued access by DOD to the leading-edge technologies formerly provided by IBM is uncertain. By not addressing alternative options when the Defense Science Board first raised them as urgent issues and by relying on a sole source supplier for leading-edge microelectronics, DOD now faces some difficult decisions with potentially significant cost and schedule impacts to programs that rely on these technologies, as well as national security implications.