

## Project Brief: Harnessing the Opportunity for Defense Integration in Global Value Chains

Project Directors: David Berteau and Scott Miller

The Federated Defense Project at CSIS is exploring the interaction between the Department of Defense's supplier base and global value chain (GVC) networks. What are the benefits to increased integration of value chains into the defense supplier base? To what degree are DoD suppliers already utilizing GVCs? What are the policy and institutional barriers to deeper GVC integration? How can GVCs be used to leverage international alliances?

For the past five years, the Department of Defense (DoD) has focused on protecting its core interests and riding out budget uncertainty, without significant changes to its business model. Yet technological progress is reshaping commercial environments worldwide. Falling trade costs and lowered barriers to the movement of ideas and know-how have led to the rise of complex, IT-enabled production networks known as GVCs. DoD's mandate to deliver both better outcomes and greater efficiency is coming at a time when the industrial environment in which its suppliers are operating in is also experiencing disruptive shifts from these the rise of these networks, as well as from reduced orders by traditional customers and growing competitiveness in international arms markets.

The commercial success of GVCs is a direct consequence of their ability to harness dispersed, specialized knowledge. This creates a unique problem for the defense industrial base. Technical know-how has become widely distributed, across both geographies and industrial sectors. With the dispersion and diffusion of both production and innovation, the United States no longer enjoys the level of dominance it had a couple decades ago in technological innovations, in their applications, or in the processes or practices by which they are brought into use – dominance that underpins a U.S. military strategy predicated on decisive technological superiority. This challenge extends to the defense industrial base, which for institutional and policy reasons has not adapted to be able to fully utilize dispersed knowledge. The accelerating pace of change is a threat to DoD's ability to access emerging technologies.

Key to counteracting the trends noted above will be for DoD to increase the as-yet-under-realized gains to be had through greater defense industry integration into GVCs. In the Annual Industrial Capabilities Report to Congress, DoD avers that, "the base upon which the Department [of Defense] relies is more global, commercial, and financially complex than at any time in our Nation's history." This is true of nearly every sector in the global economy, and while the role of global commercial industry in the defense-industrial base has grown, it has been slow to adapt to the new technological realities. The current business model—the industrial base approach where states are self-reliant for production—has become outdated as the commercial world has uncovered the benefits of GVCs, where firms specialize in creating value at different stages within a larger international production chain. This leads firms to locate processes where they can be performed most efficiently, including extensive use of licensing and partnership arrangements. As a result, complex final goods have increasingly become "packages of many nations' productive factors, technology, social capital, and governance capacity."

The ability to source production from those who are specialized in a particular task has also allowed firms to harness inventions from any source around the world rather than their internal R&D shops. This "open innovation" model has been a driving force for maximizing innovation potential. Rather than depend on an internal R&D infrastructure, open innovation leverages the innovative capacity of huge networks of small and medium enterprises that are eager to license and sell their intellectual property. To use an example, Procter & Gamble increased its R&D productivity 60 percent and lowered expenditures when it set a goal of acquiring 50 percent of innovations from outside the company.

Harnessing this innovation can provide both efficiency and capability gains under the restrictions of a tightening budget scenario. Innovation is not inherently a question of money; it is primarily an issue of maximizing access to knowledge. As noted in the 2014 QDR, “the pace of technological and scientific innovation in the private sector... has the potential not only to revolutionize entire industries but also to enable new ways of providing for U.S. security in the future.” While DoD could never move to an open innovation model, due to the national security sensitivity of many defense items, the institutional barriers to leveraging a broader spectrum of global innovation are enormous and onerous. Of particular note to this study are the impacts of the barriers to leveraging global value chains for innovation.

These barriers cover both those that limit the universe of innovators that DoD can leverage and those that hinder the companies that do business in defense from being more innovative, effective, and internationally competitive. This effort is pursuing two case studies to illuminate the impacts of these two linked challenges. In the case of microelectronics, onerous restrictions for those doing business with DoD has undercut the global competitiveness of U.S. firms and has siloed the U.S. defense market away from the innovations in the commercial market. In the case of unmanned aerial systems (UAS), there are parallel development streams between the commercial sector and the defense sector, but barriers between the two development streams are inhibiting innovation, driving up costs, and hindering global competitiveness of U.S. firms.

While these policies exist to protect both national security interests and the good stewardship of taxpayer dollars, they can have countervailing effects. To use one example, a major aerospace firm produces an effectively similar plane for commercial use and defense use, but the added bureaucratic and overhead costs associated with producing the plane for defense use increases the production costs by 30-40 percent. These added costs not only make acquisitions more expensive but will also limit the market to those firms that can bear the cost, effectively closing off acquisitions from other firms that would otherwise be competitive if those costs were reduced.

In the face of global trends in technology innovation, and evolution of the ways that firms develop, manufacture, and distribute their products, the Department of Defense needs to find new ways to address traditional national security concerns while leveraging the commercial dynamism of GVCs. Global value chain integration does harbor risks – information and cyber security, diminishing sources of supply, production interruption, among many others. However these can be managed to reap the benefits from harnessing new business practices which can better utilize dispersed knowledge.

The range and scope of these issues are challenging but not insurmountable. Now is precisely the time to enable and encourage those looking to bring efficiency to the system and to reconsider traditional ways of doing business. Greater GVC integration along with the conscious integration of allies and partners into the industrial base structure offers a huge source of opportunity. There are many areas where the U.S. government can remove barriers to cooperation with allies and international partners. Progress towards this end would significantly reduce costs, lead to more innovation, reduce procurement times, broaden the range of solutions, increase interoperability, and more.