



December 13, 2017

## What Next for the Third Offset Strategy?

Policymakers express increasing concern that the U.S. military risks losing its global technological supremacy. In 2014, Secretary of Defense Chuck Hagel warned that the U.S. military's dominance at sea, in the air, in space, in cyberspace, and elsewhere could no longer be taken for granted. Other countries, including potential U.S. adversaries, are modernizing their militaries, and some have acquired sophisticated missiles and precision-strike systems. These capabilities could enable them to restrict U.S. military access to operating domains and undermine U.S. ability to project power globally.

The Department of Defense (DOD) responded to this challenge during the Obama Administration with a strategy that was referred to as the Third Offset Strategy (TOS). It aimed to “offset” or nullify the advantages of competitors that had reached or were close to reaching parity with the United States in some areas of technology. The goal was to transform capabilities over time to enable the United States to prevail in contested environments and thereby restore conventional deterrence. Through the stewardship of Defense Secretary Ashton Carter and Deputy Secretary Bob Work, the TOS promoted innovation across DOD to exploit cutting-edge technologies for operational advantage. Congress generally supported the TOS and took steps of its own to enhance DOD innovation and access to technology.

### Third Offset Strategy, Defined

The TOS did not just emphasize developing technology but also fielding it in capabilities more effectively than any competitor. This, Secretary Carter argued, required promoting innovation across the DOD and building bridges between DOD and the nation's commercial technology hubs. It also required adjusting the acquisition system and human capital strategies, and offering a new emphasis on war-gaming and concept development to integrate technology into capabilities.

Investments in research and development (R&D) were one feature of the strategy. Secretary Carter proposed \$72 billion for R&D for FY2017 (a 2.8% increase over the enacted amount for FY2016), arguing that it was double what Google, Apple, and Intel had spent the previous year combined. Adjusted for inflation, this represented less than 1% increase in real terms. Investments focused on biotechnology, robotics, autonomy, and artificial intelligence (AI). Carter and Work believed that breakthroughs were on the horizon for AI and in autonomy, and that the United States was uniquely positioned to capitalize on those breakthroughs. AI and autonomy, they said, could support human decision-making and enhance human performance; they could also be injected into U.S. battle networks, electronic warfare and cyber-capabilities, hypersonics, and missile defense.

The Strategic Capabilities Office, which Carter established in 2012, was tasked with repurposing existing DOD technologies for new missions and for creative use across domains. In the medium term, DOD committed to undertaking periodic technology portfolio reviews and boosting its long-term R&D planning. Steps were also taken to improve DOD access to innovation. The Defense Innovation Board was created to bring together a group of private sector leaders to support the Defense Secretary. Carter also set up the Defense Innovation Unit Experimental (DIUx) in Silicon Valley as a kind of venture mechanism to link entrepreneurs with DOD problems and sponsors. DIUx was reformed in 2016 and expanded to Boston, MA, and Austin, TX. Some analysts argue that the DIUx was the TOS's real innovation.

Investments in R&D and private sector engagement were not seen to be sufficient on their own to keep pace with potential competitors, so the strategy also involved a new approach to human capital and leadership, as well as incentives for war-gaming. It included mechanisms for the DOD to engage private-sector talent, and incentives for innovation across the department and the services. War-gaming efforts would focus on identifying requirements for future operations as well as on building resilience into networks and training forces to operate independently of networks when necessary. Innovation in concepts could allow the joint force to find new ways of fielding technology rapidly and more effectively than competitors. Carter and Work believed the right investments combined with creative concepts and resilient operators would improve the effectiveness of U.S. forces across all operating domains.

### Global Race for Technology

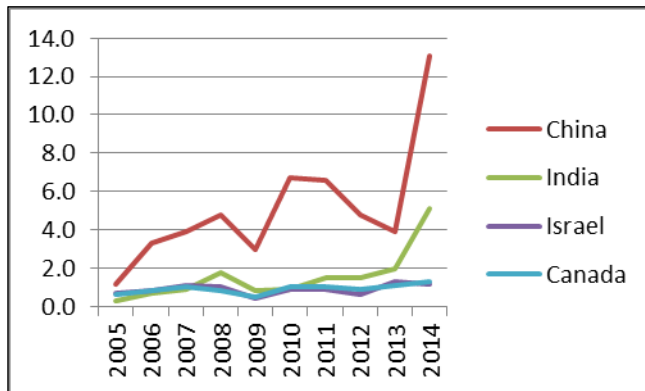
The TOS was established to respond to an emerging threat. Carter and others in the Pentagon believed that Russia and China, which they called “pacing competitors,” had achieved parity with the United States in certain areas of technology, including in battle networks. They described battle networks as Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) grids that could capture what is happening in an environment and sync that information with military effects, logistics, and support grids. Russia and China not only have networks that rival those of the United States, but they are engaged in counter-network operations against it as well. Defense analysts refer to these as Anti-Access Area Denial (A2AD) capabilities because they could undermine the United States' longstanding network advantage, which has been an important enabler of U.S. power projection.

The TOS was also established to adapt DOD to a changing technology environment. During the Cold War, the United States was the world leader in R&D and mass production,

and it attracted top S&T talent. This helped it to develop war-fighting technologies that offset Soviet conventional advantages in numbers. The development of nuclear weapons in the 1950s, analysts argue, marked the first offset, and the development of stealth, precision and computing in the 1970s gave the United States a second offset.

Since then, however, R&D leadership has shifted to commercial industry. Industry globalized, and innovation is now following the same pattern. Technological breakthroughs are more likely than in the past to take place outside the United States. Russia and China, for example, are investing heavily in AI and autonomy, and China has made great strides in biotechnology. Both are exploring ways of integrating these technologies into their defense strategies and capabilities. The *Economist* recently argued that innovation is taking off in China. It attracted \$77 billion in venture capital between 2014 and 2016, a sixfold increase from \$12 billion from 2011 to 2013.

**Figure 1. Venture capital investment by selected region, country, economy in billions of dollars**



**Source:** Dow Jones, special tabulations (2015) from VentureSource database, National Science Board, Science and Engineering Indicators 2016. This is the most recent data available from NSB.

The pace of change is accelerating in part as a result of the confluence of advancing technologies and their synergistic effects. The National Intelligence Council reports in its *Global Trends 2035* that technology is transforming society faster than economies can adjust. Achieving a third offset in this environment is seen as requiring a shift in emphasis from not just developing technology but also competing for innovation in the fielding of technology.

### How Effective Is the TOS?

The TOS sparked a wider debate in Washington about how to restore U.S. technological supremacy. For the intelligence community, the TOS resonated. Intelligence agencies face similar challenges as a result of the diffusion of technology, the importance of global networks, and the dominance of commercial R&D. They share the view that the United States will cede leadership if it fails to innovate, and they set up structures of their own, such as InQTel, which mirror the TOS in the goal of improving the agencies' access to commercial innovation.

Defense analysts differ, however, both on whether the strategy could actually achieve an offset and on what elements of the strategy should be prioritized. Some argue that despite investments in technology, the United States would nonetheless be held back by an outdated procurement system or by industry itself. The procurement system still fails to attract commercial interest, and DOD still struggles to compete with industry for S&T talent. Others felt the strategy pursued technology for its own sake and at the expense of more important efforts to identify the right problems and incentivize industry. They argued the TOS lacked sufficient prioritization, and that it was a “one-size-fits-all” fix for the entire array of defense challenges. A few felt it was simply an excuse for more defense spending.

Defense Secretary James Mattis does not use the language of the Third Offset, but he has referred to innovation in hearings and in a speech at the DIUx offices, where he argued that private sector influence and its impact on DOD would expand under his leadership. By 2018, DIUx's first pilot projects are to move into production, and the building blocks of the TOS, as envisioned by Secretary Carter, would all be in place. Congress will have an opportunity at that point to reflect on the TOS's achievements to date and to make adjustments. Questions relate to the relative priority of internal and external challenges, the acquisition system, the balance of authority between DOD and the services, and expediting the process of prototyping and deploying technology.

### Congress and Defense Innovation

Congress has played a longstanding role in promoting defense innovation. Efforts go back to the creation of the Other Transaction (OT) authority in 1994 as a vehicle for obtaining commercial R&D. Its expansion from DARPA to the rest of the DOD reflected the growing importance of commercial technology and innovation for defense. To encourage progress in R&D as well as in acquisition, the 2017 NDAA split the job of the Under Secretary of Defense for Acquisition, Technology and Logistics (AT&L) into two organizations: the Under Secretary for Research and Engineering (R&E) and the Under Secretary for Acquisition and Sustainment (A&S), which is to take effect in February 2018. According to the FY2017 NDAA Conference Report Section 901, the aim was to “elevate the mission of advancing technology and innovation within the Department and foster distinct technology and acquisition cultures to better deliver superior capabilities.”

U.S. policymakers, including Congress, remain constrained by spending caps in the Budget Control Act and face competing pressures from the nuclear and conventional modernization agendas. If Congress desires, it can play a leading role on defense innovation by providing reliable funding, structuring incentives for innovation, fostering debate, and helping let commercial innovators know that DOD is open for business.

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