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Applying Rapid Acquisition Policy Lessons for Defense Innovation

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Abstract: With the Department of Defense's (DOD) recent focus on importing Silicon Valley-style innovation practices to its acquisition process, it is important to assess an organization's ability to effectively merge new concepts and practices with the existing acquisition system. This article examines applicable lessons from the DOD's rapid acquisition practices during Operations Iraqi Freedom and Enduring Freedom, which functioned counter to many conventional acquisition processes. This research finds that DOD can incorporate innovation practices by dispersing organizations focused on new capabilities development across the agency to avoid direct competition with the existing acquisition system, allowing them to refocus and adapt often, and by ensuring senior leader championship of these efforts.

Keywords: defense acquisition, defense procurement, rapid acquisition, defense innovation, program management, organizational culture, Operation Iraqi Freedom, Operation Enduring Freedom, acquisition processes, Defense Innovation Unit Experimental, DIUx, Joint Improvised Explosive Device Defeat Organization, JIEDDO, Rapid Equipping Force, REF

Silicon Valley-style innovation is a hot topic in the Department of Defense (DOD). For the past three years, its leaders have been speaking about it, writing about it, and setting up new organizations to harness

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it.¹ This focus is motivated by several factors, including a desire to capitalize on the high-profile successes of technology firms in Silicon Valley that are synonymous with cutting-edge solutions; the need to respond to the diminishing technological gap between the United States and potential adversaries; and the Pentagon's perennial desire to continuously modernize its weapons.²

Harnessing the ingenuity of the nation's foremost creative minds for defense is a fine goal. However, the kind of disruptive innovation from which Pentagon policy makers seek to benefit runs counter to existing U.S. defense acquisition processes and practices established during the past 50 years. The bureaucracy that administers the defense acquisition systems is deliberative, risk averse, and governed by extensive regulations. This is intentional; the conservative attitude stems from an institutional instinct for fair competition and good stewardship of taxpayer dollars.³ This conservative approach is just as necessary to procuring the tools of national defense as experimental moonshots are. The challenge for DOD, then, is to join the conventional system and the innovation efforts such that they work harmoniously toward one goal: increasing military effectiveness.

Learning from the recent past will be useful. The DOD's experience with rapid acquisition policies during the Iraq and Afghanistan wars contain striking similarities to the present situation. Like today's initiatives, rapid acquisition operated in contrast to the conventional system. Its goal was to procure urgently needed equipment for deployed troops as fast as possible by eschewing the full acquisition process.⁴ Examining those policies can yield useful insights in crafting innovation policies and organizations that can function smoothly alongside the conventional system. Additionally, examining the contextual factors that influenced rapid acquisition development and implementation will identify which of those insights remain relevant.

This article begins by examining DOD's rapid acquisition policies and how they evolved over the course of the Iraq and Afghanistan wars. It then examines external factors that affected rapid acquisition policy development. It concludes by identifying lessons that are applicable to facilitating productive coexistence between DOD's current innovation initiatives and its conventional acquisition system.

Trends in Rapid Acquisition Policy

Rapid acquisition is akin to thrashing a shortcut through a trail switchback; it gets the job done faster, but it is not suitable for regular, sustained use. It is a way to identify equipment needs from forces in the field and fill those needs with whatever combination of commercial off-the-shelf and developmental items are quickest. Maintenance plans are not considered and the gear is often

not ideal for use in every environment or situation. Rapid acquisition is purely a temporary solution, but it was used extensively to good effect during recent operations in Iraq and Afghanistan.

An examination of the policies themselves is necessary to understand how rapid acquisition can inform innovation efforts. Twenty-seven policy documents covering all seven of the DOD's rapid acquisition policies between 2002 and 2012 were reviewed to find common features.⁵ These were supplemented by interviews with Service and Joint personnel responsible for administering the policies, as well as select interviews with senior leaders about their perspectives on rapid acquisition.⁶

This analysis showed that policies changed over time to accommodate the capability gaps identified during the bloodiest days of the Iraq and Afghanistan wars. Rapid acquisition existed prior to these conflicts, but policies were much more modest then. When American forces began operations in Afghanistan in 2002, there were three rapid acquisition policies. The U.S. Army policy consisted of three paragraphs.⁷ The U.S. Navy and Air Force policies were longer, but still provided only vague guidance. All three policies described a process with limited scope. They did not prohibit solutions that required further development, but generally assumed that only commercially available equipment would be acquired. The policies provided little guidance on the origination of funding. All three stipulated time limits for each solution. These policies were generally discouraging for any enterprising officer with a procurement need who might stumble across them.

These scant policies were insufficient to address the numerous equipment gaps revealed during operations in Iraq and Afghanistan. They were not detailed enough to be implemented regularly. Commercial off-the-shelf equipment did not meet all the needs being identified. In Iraq especially, the increasing lethality of improvised explosive devices (IEDs) was a problem that had no commercial solution. Technology development was required.⁸ Rapid acquisition policies prior to 11 September 2001 were simply not up to the task of regulating the Pentagon's expanding need for new gear delivered quickly to troops in the field.

The DOD adapted by issuing newer and more complete policies. Existing policies were clarified and lengthened. Services that did not have rapid acquisition policies developed them, and a Joint policy was added. Lastly, two specific organizations that combined special policies, authorities, and budgets were organized: the Joint IED Defeat Organization (JIEDDO)—now the Joint Improvised-Threat Defense Organization (JIDO)—and the Army's Rapid Equipping Force (REF). Table 1 shows the progression of policies and their revisions.

Table 1. DOD rapid acquisition policies

Organization	Policy
Joint	<p>Department of the Secretary of Defense (DEPSECDEF) Memo, "Meeting the Immediate Warfighter Needs" (3 September 2004)</p> <p>Office of the Secretary of Defense (OSD) Memo, "Meeting the Immediate Warfighter Needs" (10 September 2004)</p> <p>DEPSECDEF Memo, "Joint Improvised Explosive Device (IED) Defeat" (27 June 2005)</p> <p><i>DOD Directive (DODD) 2000.19, Joint Improvised Explosive Device (IED) Defeat (27 June 2005)</i></p> <p><i>Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3470.01, Rapid Validation and Resourcing of Joint Urgent Operational Needs (JUONS) in the Year of Execution (15 July 2005)</i></p> <p><i>DODD 2000.19E, Joint Improvised Explosive Device Defeat Organization (JIEDDO) (14 February 2006)</i></p> <p><i>DODD 5000.71, Rapid Fulfillment of Combatant Commander Urgent Operational Needs (24 August 2012)</i></p>
Army	<p><i>Army Regulation (AR) 71-9, Materiel Requirements (30 April 1997)</i></p> <p>Col Robert A. Lovett, USA, "Rapid Equipping Force Streamlined Acquisition Process" (27 October 2005)</p> <p><i>AR 71-9, Warfighting Capabilities Determination (28 December 2009)</i></p>
Navy	<p><i>Secretary of the Navy Instruction (SECNAVINST) 5000.2B, Implementation of Mandatory Procedures for Major and Non-Major Defense Acquisition Programs and Major and Non-Major Information Technology Acquisition Programs (6 December 1996)</i></p> <p><i>SECNAVINST 5000.2C, Implementation and Operation of the Defense Acquisition System and the Joint Capabilities Integration and Development System (19 November 2004)</i></p> <p><i>SECNAV Notice 5000, Rapid Development and Deployment Response to Urgent Global War on Terrorism Needs (8 March 2007)</i></p> <p><i>Office of the Chief of Naval Operations 4000, Navy Urgent Needs Process Implementation (26 July 2007)</i></p> <p><i>SECNAVINST 5000.2D, Implementation and Operation of the Defense Acquisition System and the Joint Capabilities Integration and Development System (16 October 2008)</i></p> <p><i>SECNAVINST 5000.2E, Department of the Navy Implementation and Operation of the Defense Acquisition System and the Joint Capabilities Integration and Development System (1 September 2011)</i></p>
Air Force	<p><i>Air Force Instruction (AFI) 63-114, Rapid Response Process (5 May 1994)</i></p> <p><i>AFI 63-114, Rapid Response Process (12 June 2008)</i></p> <p><i>AFI 63-114, Quick Reaction Capability Process (4 January 2011)</i></p>

Marine Corps	<p><i>Marine Administrative Message (MARADMIN) 533/03, OIF II Urgent Universal Need Statement (UNS) Process (21 November 2003)</i></p> <p><i>MARADMIN 424/04, OIF III Urgent Universal Need Statement (UUNS) Process (28 September 2004)</i></p> <p><i>MARADMIN 045/06, Urgent Universal Need Statement (UUNS) Process (26 January 2006)</i></p> <p><i>Marine Corps Order (MCO) 3900.17, The Marine Corps Urgent Needs Process (UNP) and the Urgent Universal Need Statement (Urgent UNS) (17 October 2008)</i></p>
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By 2012, the rapid acquisition enterprise consisted of a network of policies and implementing organizations across the military Services and the Joint establishment. While there was no central direction coordinating these policies, three general trends are observable.

Rapid Acquisition for Wider Applications

First, the policies accommodated a wider range of applications over time. For instance, language in prewar policies implied that rapid acquisition should be confined to acquiring equipment that already existed (either in the commercial world or in another military Service) and did not require further research and development. The 1997 Army policy emphasized that the process should “not [be used] for development and/or procurement of a system for which there is another valid, approved requirements document.”⁹ Early policies also confined themselves to equipment that could be fielded within a relatively short timeframe from request. These times ranged from 120 days (Army) to 270 days (Navy). The effect of these stipulations was to confine rapid acquisition to a limited range of equipment that was ready to be fielded without further development or modification.

Operations in Iraq and Afghanistan revealed a need for increasingly novel solutions. In response, rapid acquisition policies shed the elements that proscribed or discouraged new technology development. The 2009 revision of the Army policy made no mention of a prescribed timeline. New organizations, such as JIEDDO and the REF, included robust developmental lines of effort. Language in the Army, Navy, and Air Force policies eliminated implicit preferences for nondevelopmental equipment within two revision cycles. The demands of the wars compelled rapid acquisition policy makers to open those policies to accommodate more flexible ways of responding to operational needs.

Leadership over Process

Second, the policies evolved to overcome bureaucratic choke points by directly involving senior acquisition leaders in the decision-making process. These

bureaucratic roadblocks stemmed from the risk-averse preferences inherent to the conventional acquisition system. Prewar rapid acquisition policies truncated the incremental steps used in the conventional acquisition process to ensure judicious use of procurement funding. This exposed the DOD to the risk of making a bad investment in unproven technology or poorly developed systems. That risk was mitigated in prewar rapid acquisition policies by restricting their use to equipment that was already fully developed. However, confining risky rapid acquisition efforts to commercial items was not sufficient for the wars in Iraq and Afghanistan.

To adapt, rapid acquisition policies involved senior acquisition leaders directly in the decision-making process, substituting their judgment for bureaucratic processes. Three-star general officers (O-9) were required for approval of rapid acquisition programs in most Services. Several policies also stipulated that Service chiefs or other senior civilian authorities (e.g., Service acquisition executives) be kept apprised of program progress. By involving senior leaders so directly in the decision-making process, the rapid acquisition enterprise transferred the risk of making a bad investment from a bureaucratic process that diluted immediate operational utility for the sake of long-term value to organizational leaders who valued immediate utility.

A Self-disciplining System

Last (and most interesting), rapid acquisition seemed to develop—unplanned—a set of checks and balances. Rapid acquisition policy pathways were generally not funded. Programs had to identify funding from other sources (known as *reprogramming*), which were generally other programs that would be delayed while the rapid acquisition program gaining the funds proceeded. Only the REF and the JIEDDO were given regular, dedicated funding in the procurement budget. All other comers had to hunt for their money.

The lack of dedicated funding disciplined the rapid acquisition processes. Rapid acquisition program officers had to be entrepreneurial in identifying funding sources and gaining enough stakeholder buy-in to ensure funds were reprogrammed to their needs.¹⁰ This served as a screening function that prevented programs that were wasteful or not cost-effective from proceeding. Indeed, the ready availability of dedicated money for JIEDDO products opened it up to accusations that it was being wasteful.¹¹

These trends suggest that DOD rapid acquisition policies balanced the competing needs for speed and responsiveness with oversight and probity through a clever ecosystem of regulatory mechanisms. Rapid acquisition grew to encompass a wider range of applications during Operations Iraqi Freedom and Enduring Freedom. To maintain its emphasis on speed, though, rapid ac-

quisition substituted strict policies for a loose set of informal screens that relied more on the holistic judgment of senior leaders, specific needs, and funding constraints to minimize bad investments.

These checks and balances were not written in policy, but they were remarkably effective. While the three trends noted in this research do not explicitly point toward the need to balance speed with accountability, the effect was the same nonetheless, supporting the development and fielding of a variety of innovative and useful systems. Some examples include:

- AN/PRC-117G tactical radios, which gave troops in the field the ability to form ad hoc mobile networks to transmit and receive data
- Counter Radio-Controlled IED Electronic Warfare (CREW) systems, which were a series of iteratively better IED jammers that eventually rendered enemy remotely detonated IEDs useless
- Palantir intelligence analysis software, which provided intelligence analysts with a powerful tool to sift through large amounts of information to look for patterns and trends

External Factors in Rapid Acquisition Success

It is not enough to copy the best rapid acquisition policy attributes for successful defense innovation policies. Political, operational, and tactical factors influenced their development, and some of these factors may not hold true in the future—some definitely not so. In any case, it is important to examine them as well, to understand the extent to which rapid acquisition lessons can apply to defense technology development programs.

Wartime Feedback

It was easy to discover whether a rapid acquisition program was successful or not because equipment was being used immediately in combat. Feedback from the field was often fast and plentiful. This allowed stakeholders to quickly drop programs that were not effective against the enemy and to incrementally improve programs that showed promise. Such immediate feedback may not be the case for defense innovation efforts today or in the future.

The case of IED jammer procurement illustrates how important immediate feedback was to the way rapid acquisition worked. Improvised explosive devices planted by Iraqi insurgents were maiming and killing hundreds (and later, thousands) of U.S. troops almost as soon as the conventional phase of the war ended in spring 2003. The most sophisticated of these were remotely detonated using cell phones, long-range cordless telephones, and other wireless

devices. Electronic jammers to disrupt these IEDs existed in the U.S. inventory, but they were large and unwieldy devices meant to be used by aircraft to provide electronic jamming for large naval and aerial formations.¹²

One jammer (called Acorn) had potential, though. Originally a Navy program developed in the 1980s to provide electronic protection to docked ships, it was rewired by Army scientists in 2003 to jam one type of remotely detonated IED.¹³ Acorn was not perfect; insurgents merely had to change the frequencies on their detonators to prevent interference. It also jammed U.S. communications equipment. Nevertheless, it was a promising start.

Improvements were necessary. To begin, DOD used new rapid acquisition authorities granted by Congress in 2004 to start JIEDDO. During the next five years, JIEDDO spent almost \$17 billion to develop more than 15 types of jammers.¹⁴ Jammers were fielded quickly to troops, and feedback was collected and used to influence the design of the next iteration. Some types of jammers were fielded in parallel to test different concepts. By 2009, jammer technology had advanced to the point where insurgents were giving up on remote detonation and returning to IEDs that used wires for detonation.¹⁵

Compared to conventional acquisition programs, the IED jammer was a success story. A seemingly intractable problem was solved using a combination of American technological prowess and focus, unencumbered by the conventional procurement bureaucracy. That success, however, owes as much to the ability to get quick feedback from the field as it does to the rapid acquisition policies that enabled JIEDDO. If these jammers were not pitted against thinking and adaptive adversaries from the outset, it is unlikely that the technology would have been developed as quickly as it was.

Evolutionary versus Revolutionary Solutions

Another unfortunate aspect of rapid acquisition policy is that it is not concerned with finding innovative solutions. Rather, it is a reactive process. The enemy finds a U.S. weakness and exploits it. Troops respond by identifying the gap and suggesting a solution. The rapid acquisition process begins there. This bottom-up process is a virtue because it involves troops more deeply throughout the development, fielding, and feedback process, unlike the conventional acquisition system.

However, fulfilling the immediate needs of troops in the field can bias the process toward evolutionary or incremental solutions that can be implemented quickly, rather than the leap-ahead, revolutionary solutions that are the hallmarks of defense innovation. Troops are interested in solving immediate problems and may not be focused on new concepts, employment methods, and technologies. Cutting-edge and clever gear can be developed through rapid acquisition, but not deliberatively.

The IED jammer again provides an excellent example. The most sophisticated jammers today (the Army's Duke series CREW systems) are very effective at stopping IED detonation signals, but they have very little functionality beyond that. The Duke system cannot direction find, spoof, or execute any other electronic warfare task. As a result, the Army had to invest in other electronic warfare projects to supplement Duke's single focus on jamming IED detonation signals.¹⁶ This does not detract from Duke's technological sophistication or achievements, but it does highlight the fact that Duke and other jammers were made for limited, discrete purposes.

Note that the bottom-up rapid acquisition process does not inherently hinder innovation. These processes and policies, however, depend on the creativity of the troops initiating the rapid acquisition process. In some cases, revolutionary advances do occur. The case of the AN/PRC-117G tactical radio is illustrative.¹⁷ Unlike previous radios, AN/PRC-117Gs can be used to construct data networks that enable troops to have wifi-like capabilities in the field, allowing them to access video feeds, files, and even the military's classified networks. The DOD had been attempting to develop this capability through its conventional acquisition process since 1997. By 2009, the program (Joint Tactical Radio System, or JTRS) was still grappling with numerous development obstacles, delaying completion and fielding. In the meantime, a private company, Harris Corporation, foresaw that DOD would have development problems with JTRS and decided to invest resources in creating a networkable radio that was not as sophisticated as JTRS but was a step above radios already in use.

The result was the AN/PRC-117G. It could not host as many network nodes as the JTRS radio and was less elegantly designed, but it was available when Marines in Afghanistan sought a networkable radio for checkpoints. The Marines were conducting biometric screening on Afghans entering the checkpoint, but because they lacked network connectivity, they could not check their biometric databases in real time. Harris made sure the Marines knew about the AN/PRC-117G, and when development was complete, the Marines requested it via rapid acquisition processes. Although the radio was not as sophisticated as the planned JTRS radio, mobile network connectivity significantly enhanced the troops' ability to maintain connectivity during operations.

The bottom-up process was the right approach for wartime rapid acquisition. The focus on troops' immediate needs at the expense of other goals (e.g., greater technological sophistication, added functionality, etc.) enabled the speedy delivery of needed equipment to troops in the field. The drawback to emphasizing bottom-up solutions is that it also must be depended on for revolutionary and experimental solutions, and as has been discussed earlier, troops are focused on immediate needs, not looking ahead to the challenges of tomorrow or those of other operating environments. While it is always possible

for this process to spark an innovative solution with long-term viability, policies designed more specifically to generate revolutionary ideas and concepts are preferable.

War's Motivating Effects

The fact that the United States was fighting a war that consumed American lives, limbs, and treasure dampened bureaucratic resistance to rapid acquisition. Rapid acquisition's relatively fast-and-loose rules ran counter to the DOD acquisition community's cautious instincts, born of a desire to judiciously spend taxpayer dollars, so there was resistance to some rapid acquisition programs. One example is the Palantir intelligence analysis software, which was adopted by the Marine Corps Special Operations Command and other intelligence organizations, but not by the Army.¹⁸ The Army preferred to continue developing the Distributed Common Ground System—Army (DCGS-A), which was being procured through the conventional process. Despite Palantir being preferred by Army intelligence analysts in Iraq and Afghanistan, the Army backed DCGS-A. It clashed with Congress about Palantir, and litigation about Palantir's future with the Army continues. With the end of large-scale combat operations and the resulting emphasis on rapid acquisition, institutional resistance such as that faced by Palantir will likely increase.

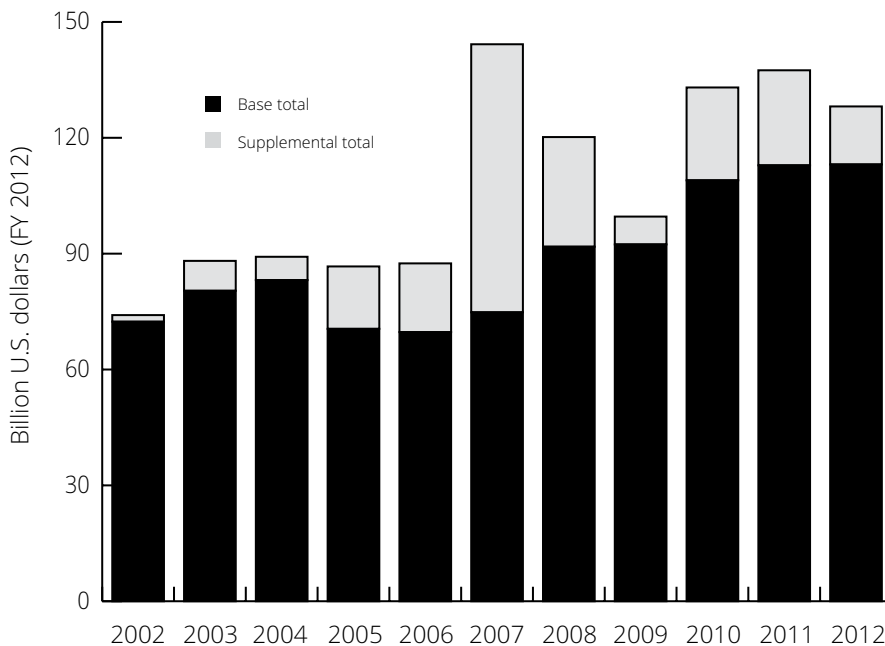
The end of high-profile campaigns also signals the end of devoted senior leader attention to rapid acquisition, which was a critical element of rapid acquisition success. Senior leaders instilled a sense of urgency and purpose across the DOD by their explicit support of rapid acquisition. They also involved themselves in the process. Both a former secretary of defense and a former chairman of the Joint Chiefs of Staff stated emphatically that approving and championing rapid acquisition programs was a priority for them because of the impact the programs would have on operations in Iraq and Afghanistan. If rapid acquisition policies and practices form the basis of policies that facilitate defense innovation, then those policies must also retain the attention of senior leaders that can support them and highlight their importance. This was the case with Ashton B. Carter, the former secretary of defense, but the turnover of the new administration means that proponents of such efforts will need to make the case anew.

Lastly, wartime supplemental funds also dampened institutional resistance. Although, as noted above, the lack of dedicated funding sources for rapid acquisition disciplined the process, the easy availability of supplemental funding made it simple for worthwhile endeavors to find funding. An analysis of supplemental funding requests from fiscal years (FY) 2002–12 shows that, after 2004, supplemental funding provided a significant and consistent source of the DOD's overall procurement budget (figure 1). Essentially, the size of the budgetary pie

increased, making it easier for rapid acquisition programs to avoid directly competing with the conventional acquisition system on the basis of limited funds.

In some cases, wartime supplemental funding was directly responsible for the success of a rapid acquisition program. The mine-resistant ambush-protected (MRAP) vehicle is a telling example. The MRAP was a heavily armored vehicle more effective at protecting its occupants from IED blasts than existing vehicles, such as the high-mobility multipurpose wheeled vehicle (HMMVW, or Humvee).¹⁹ In 2005, Marines in Iraq requested MRAPs through that Service's rapid acquisition process. However, the MRAP was not a very good all-around vehicle and did not fit into the Army or Marine Corps plans for vehicle modernization. Exchanging the thousands of HMMVWs and trucks in Iraq for MRAPs and establishing logistics support for a new vehicle was also an expensive proposition. The original request was initially rejected by the Marine Corps for these reasons. It took the direct intervention of the secretary of defense and the emergency allocation of \$50.7 billion by Congress to overcome the Corps' institutional resistance to the vehicle. Ultimately, more than 23,000 vehicles were fielded, reducing potential casualties by an estimated 50 percent.²⁰

Figure 1. Procurement budget requests (FY 2002–12)



Source: Author's analysis of DOD procurement and supplemental budget documents.

Rapid Acquisition's Coexistence

The internal policy and exogenous factors identified here show that rapid acquisition managed to coexist with the conventional acquisition system by avoiding competition with it. Rapid acquisition was small; it was governed by a dispersed array of policies in the military Services and across DOD. It did not exist as a single coherent organization that could be a bureaucratic target. Furthermore, by relying on reprogramming and supplemental funds, it did not directly compete with the existing procurement budget. The total amount spent on rapid acquisition between fiscal years 2002–12 is estimated to be \$103 billion.²¹ Of that amount, \$72.7 billion was definitely spent on the two biggest (and arguably most controversial) programs, the MRAP and JIEDDO efforts. All other rapid acquisition efforts spent between \$13.3 billion and \$30.3 billion during the 10-year period and across scores of rapid acquisition programs. By remaining small, dispersed, and obscure (except for MRAP and JIEDDO), rapid acquisition avoided direct confrontation with the conventional acquisition system in the most vital and bloody of all bureaucratic struggles: the federal budget process.

The relatively small amount spent on rapid acquisition also points to its relatively modest goals. Although rapid acquisition policies became more generalized, they were still geared toward solving small and discrete tactical problems. Rapid acquisition policies emphasized bottom-up input, particularly from troops in the field, often resulting in evolutionary solutions rather than revolutionary ones. While there were exceptions—Palantir and AN/PRC-117G were significant technological advances, despite their origins as rapid acquisition programs—most programs were meant to address limited problems. Again, this helped prevent rapid acquisition from directly competing with the more sophisticated and cutting-edge programs that the conventional system was attempting to develop and procure.

When competition could not be avoided, though, senior leader support was necessary to sustain a rapid acquisition program. The two largest and most prominent programs, MRAP and JIEDDO, were very controversial. The MRAP was seen as a threat to existing tactical vehicle programs, while JIEDDO was considered to be an expensive program with mixed results. In both cases, senior leaders' attention was necessary to sustain them. Both programs encountered institutional resistance due to their size and prominence and required intervention by senior leaders to prevail. As mentioned above, MRAP required direct intervention by the secretary of defense and Congress.

Toward an Innovation Policy Framework

Some aspects of rapid acquisition will not be relevant to the success of defense innovation initiatives going forward. They cannot rely on budget re-

programming or supplemental funding, for instance. Bottom-up input will be important, but it cannot drive development by itself. There are not scores of American troops dying in distant battlefields to spur the defense bureaucracy to greater efforts.

Still, there are aspects of rapid acquisition that are applicable. For instance, the dispersal of innovation initiatives and a willingness to quickly change and adapt policies and organizations to operational environments is relevant. If advanced technology development efforts remain small and dispersed across the DOD, as was the case in rapid acquisition, they may avoid competing with the conventional system for resources. DOD actors, such as the well-funded Strategic Capabilities Office and the chief innovation officer, reporting directly to the secretary of defense, should take care to ensure that these organizations do not become mired in bureaucratic battles with the existing acquisition system.

A willingness to change and adapt innovation policies and modify organizations will also be helpful. Rapid acquisition policies expanded dramatically because they were forced to do so by circumstances. Innovation initiatives will also face rapidly changing environments, as different technologies develop at different times or in ways that cannot be foreseen. Defense leaders should be prepared and proactive in ensuring that policies and organizations facilitate breakthrough developments, rather than serving as constraints that must be overcome. The recent reorganization of the Defense Innovation Unit Experimental (DIUx) is a promising sign that the DOD is willing to focus on results rather than process. The DOD should continue to remain open to similar moves.

The most important lesson to learn from the rapid acquisition experience is the critical need for senior leaders' attention. The scope and ambition of DOD's efforts to take advantage of civilian technology development by circumventing normal bureaucratic processes will likely bring them into direct competition with the conventional acquisition system. Unlike rapid acquisition, these efforts are meant to be revolutionary. A significant portion of innovation efforts today are concentrated on developing technologies that will form the basis for a third offset of military capabilities.²² Given the scope of previous offsets, the third offset is also likely to be a significant endeavor.²³ Perhaps some differentiation is possible to avoid friction with the conventional acquisition system, but the scope of DOD's efforts are large enough to engender competition. Indeed, DOD's current efforts have already run afoul with some congressional stakeholders.²⁴

To address this, senior leaders need to be active champions of innovation initiatives. This was an essential factor in successful rapid acquisition programs, particularly high-profile ones such as MRAP and JIEDDO. Senior leaders provided the strategic focus and direction that mitigated most of the institutional

resistance that both programs encountered. However, the MRAP was developed and JIEDDO operated during the height of the Iraq War, when casualties were mounting and leaders were focused on addressing the IED problem.

This may not be the case for future defense innovation initiatives. Although Secretary of Defense James N. Mattis appears to support his predecessor's initiatives in this area, he has not championed them to the degree that former Secretary of Defense Carter did. Without the level of support, drive, and motivation necessary to ensure their survival and success, innovation initiatives may fade into irrelevance, or come into conflict with the conventional acquisition system. This is an obvious but essential challenge that organizations will need to consider.

Notes

1. Defense leaders for the past three years have been particularly prolific in their speeches and writings about the role of Silicon Valley-style innovation in defense. Some organizations that have been set up recently to focus on defense innovation include the Defense Innovation Unit Experimental (DIUx), the Strategic Capabilities Office (SCO), and organizations specific to the military Services like the U.S. Air Force's Rapid Capabilities Office (RCO). See, for example, Chuck Hagel, "Reagan National Defense Forum Keynote" (speech, Ronald Reagan Presidential Library, Simi Valley, CA, 15 November 2014); Ash Carter, "Drell Lecture: Rewiring the Pentagon: Charting a New Path on Innovation and Cybersecurity" (speech, Stanford University, Palo Alto, CA, 23 April 2015); and Robert Hummel and Kathryn Schiller Wurster, "Department of Defense's Innovation Experiment," *Science, Technology, Engineering, and Policy Studies*, no. 4 (July 2016): 12–21.
2. These issues are common themes highlighted by former Secretary of Defense Ashton B. Carter. His speech announcing the opening of the DIUx in Boston is typical. See Ash Carter, "Remarks on Opening DIUx East and Announcing the Defense Innovation Board" (speech, Cambridge, MA, 26 July 2016).
3. How effective those regulations are in achieving this goal is questionable at best.
4. For a general description of rapid acquisition policy methods and goals, see *Report of the Defense Science Board Task Force on the Fulfillment of Urgent Operational Needs* (Washington, DC: Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, 2009).
5. The high number of revisions across the policy documents suggests that DOD was revising the documents based on increasing usage. Examining policy items that were added, omitted, or retained over time can be particularly important in understanding what policy tools worked and which did not. Documents are available on the Defense Technical Information Center (DTIC) website, as well as by request to the staff of the secretary of the Air Force for Acquisition (SAF/AQ).
6. The interviews were conducted with a former Service secretary; a former under secretary of defense for Acquisition, Technology, and Logistics; a former chairman of the Joint Chiefs of Staff; and a former secretary of defense.
7. *AR 71-9, Materiel Requirements, 30 April 1997* (Washington, DC: Headquarters, Department of the Army, 1997).
8. For an excellent description of DOD's struggles to confront the IED crisis, see the four-part special report series by Rick Atkinson, "Left of Boom: The Struggle to Defeat Roadside Bombs in Iraq and Afghanistan," *Washington Post*, 30 September 2007.
9. *AR 71-9*, 8.
10. It should be noted that the overall defense budget was increasing due to the regular approval of wartime supplemental funds. This almost certainly made it easier for pro-

- gram officers to successfully find funding sources. External factors are discussed with greater detail on pages 57–61.
11. By 2014, JIEDDO was no longer seen as an innovative and mission-oriented organization. As operations in Iraq and Afghanistan ended, policy makers and commentators questioned its expenditures and the effectiveness of its programs. For a concise description of these arguments, see Dan Lamothe, “The Legacy of JIEDDO, the Disappearing Pentagon Organization that Fought Roadside Bombs,” *Washington Post*, 17 March 2015.
 12. American troops did use these large platforms, which were effective but limited in number. See Glenn W. Goodman and John Knowles, “Compass Call: The New AEA,” *Journal of Electronic Defense* 30, no. 5 (May 2007): 30–37.
 13. Noah Shachtman, “The Secret History of Iraq’s Invisible War,” *Wired*, 14 June 2011.
 14. Lamothe, “The Legacy of JIEDDO.”
 15. For a survey of some of the technical challenges that were overcome by engineers, see Patrick Nickel et al., “Responsive Communications Jamming against Radio-Controlled Improvised Explosive Devices,” *IEEE Communications Magazine* 50, no. 10 (October 2012): 38–46, <https://doi.org/10.1109/MCOM.2012.6316774>; Michael E. Pesci, “Systems Engineering in Counter Radio-Controlled Improvised Explosive Device Electronic Warfare,” *Johns Hopkins APL Technical Digest* 31, no. 1 (June 2012): 58–65; and K. Wilgucki et al., “Selected Aspects of Effective RCIED Jamming” (paper presented at the 2012 Military Communications and Information Systems Conference, Gdansk, Poland, 8–9 October 2012).
 16. Kyle Borne, “US Army Electronic Warfare in the Post-Global War on Terrorism World,” *Journal of Electronic Defense* 36, no. 10 (October 2013): 48.
 17. For details on the AN/PRC-117G’s development, see Jonathan Wong, “Balancing Immediate and Long-Term Defense Investments” (dissertation, Pardee Rand Graduate School, 2016), appendix B.
 18. Palantir’s development is documented in a variety of news and trade publications. See Siobhan Gorman, “How Team of Geeks Cracked Spy Trade,” *Wall Street Journal*, 4 September 2009; Ashlee Vance and Brad Stone, “Palantir, the War on Terror’s Secret Weapon,” *Bloomberg Businessweek*, 22 November 2011; Shane Harris, “Palantir Technologies Spots Patterns to Solve Crimes and Track Terrorists,” *Wired UK*, 31 July 2012; and Paul McLeary, “Army Orders Intelligence Servers Shut Down, Threatens Palantir, Continues 3rd ID Probe,” *DefenseNews*, 21 September 2012.
 19. The history of the MRAP has been the subject of numerous accounts and case studies. See, for instance, *Marine Corps Implementation of the Urgent Universal Needs Process for Mine Resistant Ambush Protected Vehicles*, Report No. D-2009-030 (Washington, DC: Office of the Inspector General, Department of Defense, 2008); Christopher J. Lamb, Matthew J. Schmidt, and Berit G. Fitzsimmons, *MRAPs, Irregular Warfare, and Pentagon Reform* (Washington, DC: Institute for National Strategic Studies, National Defense University, 2009); Andrew Feickert, *Mine-Resistant, Ambush-Protected (MRAP) Vehicles: Background and Issues for Congress* (Washington, DC: Congressional Research Service, 2011); and *Impediments to Acquisition Excellence Illustrated by the MRAP Case, Hearing on Case Studies in Defense Acquisitions: Finding What Works, before the House Armed Services Committee*, 113th Cong. (24 June 2014) (statement of Dr. Christopher J. Lamb, distinguished research fellow and deputy director, Institute for National Strategic Studies, National Defense University).
 20. Lamb, Schmidt, and Fitzsimmons, *MRAPs, Irregular Warfare, and Pentagon Reform*.
 21. The amount that DOD spent on rapid acquisition remains unclear due to spotty documentation. The Government Accountability Office estimated the total at \$77 billion for FY 2005–10, while the author’s previous research suggests that it could be as high as \$103 billion for FY 2002–12. See *Warfighter Support: DOD’s Urgent Needs Processes Need a More Comprehensive Approach and Evaluation for Potential Consolidation*, GAO-11-273 (Washington, DC: Government Accountability Office, 2011); and Wong, “Balancing Immediate and Long-Term Defense Investments.”
 22. For a summary of the third offset, see Robert Martinage, *Toward a New Offset Strategie*

gy: *Exploiting U.S. Long-Term Advantages to Restore U.S. Global Power Projection Capability* (Washington, DC: Center for Strategic and Budgetary Assessments, 2014).

23. The first offset is understood to be nuclear weapons. The second offset is understood to be sensors and precision-guided weapons.
24. See William Thomas, "Tensions Arise between DOD and Congress over Future of Defense Innovation and Research," *FYI: Science Policy News from AIP*, no. 88 (July 2016).