Making DHS More Efficient

Industry Recommendations to Improve Homeland Security

Daniel M. Gerstein

RAND Office of External Affairs

CT-438
September 2014

Testimony submitted to the House Homeland Security Committee, Subcommittee on Oversight and Management Efficiency on September 18, 2015

This product is part of the RAND Corporation testimony series. RAND testimonies record testimony presented by RAND associates to federal, state, or local legislative committees; government-appointed commissions and panels; and private review and oversight bodies. The RAND Corporation is a nonprofit research organization providing objective analysis and effective solutions that address the challenges facing the public and private sectors around the world. RAND’s publications do not necessarily reflect the opinions of its research clients and sponsors. RAND® is a registered trademark.
Introduction

Chairman Perry, Ranking Member Coleman, and distinguished members of the subcommittee, thank you for the opportunity to provide a written statement for your subcommittee hearing titled “Making DHS More Efficient: Industry Recommendations to Improve Homeland Security.” This is an extraordinarily important topic and I applaud the subcommittee’s willingness to examine this timely issue.

The hearing comes at a critical juncture, as we are witnessing dramatic continued shifts in where research and development (R&D)—important precursors for any successful acquisition—are being done. A higher percentage of the R&D is being both funded and conducted by industry rather than by the federal government (Figure 1). More R&D is being done outside of the United States (Figure 2). The net result is that less R&D as an overall percentage is being done within U.S. government laboratories or with U.S. government funding. This implies that the government, to include DHS, must become more adept at building partnerships across the security and defense mission space that allow for the sharing of technology. It further implies that the government will not be the driver to technological advancement in the way that it once was.

At the same time, some evidence exists suggesting that many of the highly innovative companies are reticent to do business with the government because of a Federal Acquisition Regulation

---

1 The opinions and conclusions expressed in this testimony are the author’s alone and should not be interpreted as representing those of RAND or any of the sponsors of its research. This product is part of the RAND Corporation testimony series. RAND testimonies record testimony presented by RAND associates to federal, state, or local legislative committees; government-appointed commissions and panels; and private review and oversight bodies. The RAND Corporation is a nonprofit research organization providing objective analysis and effective solutions that address the challenges facing the public and private sectors around the world. RAND’s publications do not necessarily reflect the opinions of its research clients and sponsors.

2 This testimony is available for free download at http://www.rand.org/pubs/testimonies/CT438.html.

3 The focus of my remarks today will be on improving the interface between the Department of Homeland Security (DHS) and industry. Therefore, I do not intend to address relationships between the Department and federally funded research and development centers (FFRDCs), such as the organization I represent, the RAND Corporation.
(FAR) system that is opaque, is difficult to navigate, and places significant demands on industry partners. More on this will be addressed below. To ensure that the government and DHS are able to meet the current demands for research, development, and acquisition (to include services), a vigorous and continuous dialogue must be developed in which DHS requirements are clearly articulated.

Industry also plays an important role in this dialogue. For example, sharing the results of internal research and development (IRAD) must occur on a regular basis. This will require new models for exchanging information with the government, while protecting sensitive proprietary information. It will also likely require either a revision to or a more enlightened view of the application of the FAR.

My remarks this morning will focus on three critical areas: (1) examining the tools that are available to the Department for working with industry, (2) discussing the importance of the Department being able to clearly articulate requirements, and (3) identifying innovative approaches for improving interactions with industry.

**Figure 1. U.S. Total R&D Expenditures, by Source of Funds, 1953–2011**

![Figure 1. U.S. Total R&D Expenditures, by Source of Funds, 1953–2011](image)

Tools Available to the Department for Working with Industry

DHS relies heavily on a variety of external sources for its research, development, and acquisition. Industry is one of these key external sources of partnership and collaboration.

FFRDCs, which include the Department of Energy Laboratories, and academic institutions, such as the DHS Centers of Excellence (CoEs), provide a majority of the basic and applied research that supports the Department’s needs. These organizations also provide some of the development that occurs in the pre-acquisition stages. The efforts of the FFRDCs and CoEs are augmented through several internal DHS labs, interagency associates, and international partners. The Science and Technology Directorate (S&T) is responsible for conducting and monitoring basic and applied research for DHS. Additionally, the Domestic Nuclear Detection Office and the U.S. Coast Guard, through its R&D Center, also sponsor basic and applied R&D activities.

However, a majority of the support for developmental activities and acquisition programs that occur in the Department is provided by industry partners. DHS spending in these areas is difficult to accurately measure as spending—particularly for development because it can include a wide variety of activities, from pre-acquisition to exercises and industry days—and occurs across the Department and not in any single organization. S&T is responsible for tracking the R&D portion of
spending across DHS, while the Under Secretary for Management is responsible for managing large acquisition programs within the Department.

In working to communicate with industry in the R&D stages of activity, DHS has a number of formal and informal mechanisms available. Formal mechanisms include traditional requests for proposals and requests for information that are governed by the FAR. S&T also manages the Broad Area Announcements and Small Business Innovative Research programs that serve as important avenues for providing windows into the Department for industry, as well as opportunities for the Department to gain visibility into industry capabilities in targeted areas of interest. The focus of both these programs is to attract small companies with innovative ideas to interact with the Department.

During my tenure in S&T, we were also working to provide more opportunities for industry to demonstrate their capabilities in specific areas of interest. Operational experimentation demonstrations provided industry a forum for demonstrating capabilities in areas including command and control, big data, common operational pictures, first responder technologies, and use of drones. The Department has also instituted the use of prize authority to attempt to entice industry partners to compete on challenging R&D requirements. Industry days are another mechanism by which a two-way dialogue with industry can occur. These were done both in-person and by video teleconferencing to bring in industry partners.

The Support Anti-Terrorism by Fostering Effective Technologies (SAFETY) Act continues to provide an outstanding channel of communication that benefits both our nation’s homeland security overall and the capabilities and technologies of the industry partners that gain approval for special indemnification of their technologies in the event of a designated terrorist attack.4

This short synopsis demonstrates that tools do exist for communicating with industry. However, impediments also exist that create a challenging environment for industry to successfully navigate. One source identifies that the large defense and security integrators are divesting of their “information and technical service lines” because of concerns about “revenue growth or profit potential.”5 In another dire assessment of Silicon Valley’s concerns with partnering with the Department of Defense (DoD), author Loren Thompson lists “five reasons why tech executives are likely to recoil in horror when they realize what it means to work with today’s Pentagon: (1) The margins are lousy, (2) Intellectual property is at risk, (3) The regulatory burden

---

is stifling, (4) Bureaucrats don’t trust market forces, (5) The customer is a political system.”

Couple this assessment with the data in Figure 1, which highlight that industry, not the government, is driving R&D in several key areas based on market forces and opportunities for higher rates of return. While this assessment directly pertained to the DoD, these same forces exist for DHS; in fact, they are even more pronounced, given the far smaller footprint and available resources of DHS. The strong implication is that the government, in this case DHS, must become a more savvy, well-informed, and uncomplicated partner.

**Importance of Clearly Articulating Requirements**

Identifying requirements and articulating them clearly to industry is perhaps the single most important aspect inherent in developing a more progressive dialogue between DHS and industry.

Industry continues to inquire about what DHS requires in such areas as R&D, systems acquisition, and services support. Unfortunately, this has been a complex issue, as it has been problematic to develop actionable requirements that have enough specificity to guide industry’s efforts yet are not so specific as to constrain potential innovation. The result can be seen clearly by examining several high-profile acquisitions that were unsuccessful and for which the programs had to be canceled. The most recent of these was the Biowatch Gen 3 environmental sampling system.

The difficulty in developing clear requirements was summed up in a 2012 Government Accountability Office (GAO) document, which identified that of 71 major acquisitions at DHS, 43 had been identified as failing and had allowed ”capabilities that the program was designed to provide [to] change over time because of poorly defined, unapproved, and shifting baseline performance requirements.” In fairness, this shortfall has been recognized and efforts are under way to develop a well-defined requirements generation process. This effort remains a work in progress.

---


Another GAO report highlighted one opportunity: “The first, and perhaps best, opportunity to reduce acquisition risk is in the planning phase, when critical decisions are made that have significant implications for the overall success of an acquisition.”

Bringing in industry early in the planning process can assist with technical specifications and technology readiness assessments, which are essential to successful acquisition programs.

A major element of the Unity of Effort initiative announced by DHS Secretary Jeh Johnson upon his arrival in the Department concerned developing operational requirements that would improve the DHS acquisition system and result in greater effectiveness and efficiency across the Department and within individual Components.

The Unity of Effort initiative resulted in the standing up of a Senior Leader Group (SLG), a Deputy’s Management Action Group, (DMAG) and a Joint Requirements Council (JRC). While the SLG and DMAG forums are not solely to assist in developing Department and Component requirements, they are intended to have the requirements generation piece as a core function. This should provide a greater link between strategy and resourcing once these management activities are fully implemented. Most recently, the Secretary has signed a memorandum reinstating Integrated Process Teams (IPTs) for coordinating requirements across mission areas. Further, the teams should provide a systems approach to generating requirements, which has been lacking at points in the Department’s history. The IPTs should result in the development of mission roadmaps that identify capabilities, timelines, technologies, and acquisitions that are of interest to DHS and the Components. One source notes, “These IPTs will be charged with coordinating and prioritizing research and development across the department in a number of areas, including aviation security, biological threats, counterterrorism, border security, cybersecurity and disaster resilience.” While these activities are appropriate and necessary to address DHS management shortfalls, a cautionary note is in order. Similar initiatives have been tried before but have not fully taken hold. Additionally, with slightly over a year left in the administration, institutionalizing these efforts will become even more challenging.

This body of activity under the Unity of Effort umbrella, if successful, should provide greater focus on generating requirements that result in a clear set of the capabilities that DHS is seeking. The outputs of these forums, if shared with industry, would provide the type of information that is critical to allowing industry to make informed decisions about where to spend its IRAD dollars and

---

where the Department was planning for development capabilities and ultimately intending to make acquisition decisions. Therefore, once the IPTs have reached an appropriate maturity and documentation is available that highlights capability gaps and approaches for operational solutions, industry could—within the limits of operational security—be provided access to this information. This would allay one of the major complaints that industry has made regarding access to the R&D requirements that S&T is pursuing and the Component operational requirements for potential acquisitions.

**Innovative Approaches for Improving Interactions with Industry**

Improving interactions with industry is a necessity, not an option, for assuring homeland security today and into the future. The changes across the R&D global community will mandate that government becomes more nimble in working with industry. As a greater percentage of the R&D is conducted by nongovernmental and international entities, a corresponding change in how the government acquires essential capabilities will be required. The recent incorporation of prize authority competitions is one example of an innovative approach that has been employed elsewhere with positive results.

Five additional potentially innovative approaches for enhancing DHS-industry collaboration are highlighted below.

*Identifying Areas of Priority Effort*

An important starting point will be for DHS to put research, development, and even certain acquisitions into three discrete bins of activity. The first bin would include those technologies and systems for which the Department should rely on commercial-off-the-shelf capabilities. This bin includes technologies for which industry is the clear leader and the government can benefit from the previous developmental activities of industry. Examples could include commercial software products that, with little or no modification, could meet established operational requirements. The second bin would include technologies for which industry is a leader, but the government desires to stimulate the market to produce a specialized capability that, upon fielding, would be exclusively for the government. An example would be a low-light, long-distance camera for law enforcement purposes. For such a system, the government must become adept at monitoring the state of the market and, at the appropriate point, providing seed money for the specialized capability to be developed. The third bin includes those areas where the government will need to stimulate the market because no commercial market is envisioned. An example is detection of
homemade explosives for government applications. In such areas, the government should and must lead R&D efforts by stimulating and incentivizing industry through investments.

In this binning construct, the nature of the technical workforce must evolve. DHS will need personnel who are less scientists than technologists. The distinction is that scientists would be conducting the R&D while technologists would be identifying sources of technology, assessing technology readiness levels to understand the maturity of the technologies, and binning the efforts to understand where DHS resources should be expended.

**Systems Analysis**

DHS must employ a systems approach for generating requirements and fielding capabilities. The individual R&D and acquisitions are less important than understanding how they fit together in coherent systems designed to meet the operational requirements of the force. THE SLG-DMAG-JRC-IPT processes serve as important management forums in this regard. Therefore, efforts must continue through these forums to focus on identifying and supporting developmental capabilities that will enhance the operational efficiency and effectiveness of the Department and the homeland security enterprise. Such a systems analysis must account for solving operational problems. A useful framework is the DOTMLPF-P (Doctrine, Organizations, Training, Material, Leadership, Personnel, Facilities-Policy) approach similar to that employed by DoD. Such a framework provides recognition that not all shortfalls require an acquisition program.

**Understanding DHS Requirements**

In the Homeland Security Act of 2002, S&T has the authority to develop a consolidated listing of all R&D that is ongoing in the Department. This includes the R&D that S&T is doing in support of the homeland security enterprise (i.e., the Department; Components; state, local, tribal, and territorial governments; and first responders and law enforcement) and individual Component efforts. Having such a consolidated view is essential to generating comprehensive requirements, as well as developing capabilities that are operationally effective and efficient. These consolidated capability requirements could be shared with industry, again subject to security and classification requirements.

**Access to Industry Internal Research and Development**

A significant frustration during my time leading S&T was how to garner insights into the IRAD being done within industry. Here, industry can take the lead offering opportunities that allow DHS developers to see various technologies in simulated operational environments. While the
operational demonstrations described previously were led and funded by the government, industry could take the lead for modest demonstrations that would bring together industry partners focused on certain topic areas. Discussions between DHS and industry organizations such as the Homeland Security and Defense Business Council that Marc Pearl represents should take the lead in identifying processes for sharing corporate IRAD with DHS leaders, technologists, and the Components. Undoubtedly, the nature of the IRAD will require certain agreements so as not to jeopardize corporate proprietary information.

*Federal Acquisition Regulation (FAR) as an Impediment*

Developing a more collaborative approach to DHS-industry relations should entail a reexamination of the FAR. Today, the FAR is overly conservative and prohibits many interactions that could be very useful for both parties. Furthermore, many assert that the FAR hinders innovation and lengthens response times for fielding essential security capabilities. The Chief Technology Officer at Customs and Border Protection, Wolfe Tombe, described the FAR’s negative effect, stating,

> Now we go out with a request for proposals and we’ll say what we think we need, and I think a lot of times there are vendors who could come back if the FAR allowed it, and [recommend better, more cost-effective solutions]. The FAR needs to be redone so it enables that kind of interaction. It’s hard [for a vendor] to come back and say they have a better idea.¹⁰

Tombe went on to say, “It makes no sense to put out a contract for three months worth of work to build a mobile app and take 18 months to get that award out the door.”¹¹

In short, the rigidity of the Industrial Age FAR is colliding with the requirements of an Information Age where speed and agility are of greater value. Further, with a more youthful acquisition workforce, accustomed in their private lives to real-time, ubiquitous communications, such stifling administration is both a frustration and a hindrance. As noted earlier, many companies, including in the information technology and big data fields, are deciding not to engage with the government largely due to antiquated bureaucracy.

¹¹ Verton, 2014.
Conclusions

The range of challenges facing the Department and homeland security enterprise will continue to evolve and in many cases grow. Ensuring that preparedness and response capabilities will keep pace necessitates a vigorous and continuous dialogue with industry.

It is clear from the actions over the past two years that the Department has recognized that a more robust engagement with industry is essential to successfully executing the homeland security mission. Such activity is cause for tempered optimism.

The optimism is tempered in the sense that other DHS reform efforts that have also recognized the need for a more vigorous and continuous dialogue with industry have not been successful. Despite promising rhetoric, only modest progress has been made. A significant cause of these failures has been the rapid turnover of personnel in DHS and the failure to codify these changes through legislation.

In my judgment, many of the tools are in place to support more-fruitful DHS-industry dialogue. It is a matter of properly employing the available tools. Another important limiting factor for the Department has been the inability to articulate actionable capability gaps that could help industry better understand emerging requirements in order to allow for directing their IRAD toward these gaps. Finally, DHS should look to develop more-innovative approaches for improving interactions with industry. The use of prize authority is one such example. Another would be a more focused review of R&D efforts to determine areas for investment versus areas where DHS will monitor the technology and become an adopter of it.

I appreciate the opportunity to discuss recommendations for improving the homeland security of our nation.