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Reducing the Cost and Risk of Major Acquisitions at the Department of Homeland Security

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Formed a decade ago, the Department of Homeland Security (DHS) is a young organization that is still developing methods for integrating management functions and coordinating policies across its many component agencies and offices. This management challenge is compounded by many factors, such as the diversity and maturity of the established policies and procedures that individual components had before joining DHS; the relatively small DHS headquarters staff; a heavy reliance on contractors, who account for half of the DHS workforce;[1] and an overabundance of oversight committees in Congress that results in conflicting guidance to DHS and its components, thereby weakening headquarters efforts to assert management or oversight responsibilities.[2] The result is that it is difficult to enact and enforce policies at DHS that are not supported by the leadership of each component.

These challenges conspire to undermine efforts by DHS headquarters to improve acquisition practices and management controls over the many major acquisition programs under way across the department. Major acquisitions at DHS are defined as those with life-cycle costs above $300 million, though more than half of such programs at DHS (43 of 77 in 2011) have expected life-cycle costs over $1 billion. The result has been unacceptably high numbers of major acquisitions being canceled, taking too long, costing much more than planned, or delivering less-useful capabilities than originally proposed. Indeed, recent reviews by the U.S. Government Accountability Office (GAO) suggest that more than half of the 77 major acquisition programs at DHS are over budget or behind schedule, and that for those 16 programs for which information on cost growth could be established, program costs had risen 166 percent in three years, from $19.7 billion in 2008 to $52.2 billion in 2011.[3]

Major Acquisitions at the Department of Homeland Security

Widespread cost, schedule, and performance shortfalls point to ongoing and expensive problems in the DHS acquisition process.

These problems are attributable to a range of management challenges, including the relative youth and inexperience of the organization, a weak headquarters function with a small staff, and the legacy of existing programs and acquisition culture in DHS components that may be resistant to change, as well as a range of program planning and execution factors that we discuss further below. The objective of this paper is to articulate this challenge, identify the sources or root causes of key problems, and suggest ways that DHS can mitigate those problems and improve the performance of its acquisition process. We synthesize the results of existing analyses of DHS acquisitions, including information obtained through interviews with current and former senior DHS acquisition officials, and draw on RAND's knowledge and analytical experience of acquisition improvement at the Department of Defense (DoD) and other government agencies. This paper is intended to help improve DHS acquisition management and oversight by providing a common problem definition, conceptual framework, and recommendations that DHS headquarters and component acquisition officials, as well as interested parties in Congress and related agencies, can use to improve the efficiency and effectiveness of DHS acquisition organizations.

The problems with major acquisitions across DHS are generally not problems with DHS acquisition policies. That is, DHS has had policies in place for at least the last two years, and arguably since 2005, that represent good acquisition planning and implementation practices. For instance, current acquisition policy in DHS *Acquisition Directive 102* and the associated *Instruction Manual 102-01-001* describes a prudent phased approach to acquisitions, with explicit milestone reviews requiring demonstration and documentation that a good rationale exists for continu-

ing with the program and that costs and risks are understood and manageable.

The policy also calls for a review of these analytic demonstrations that is partially independent of the program office developing them and of the DHS component managing the major acquisition. Specifically, the policy gives acquisition decision authority to the Under Secretary for Management, the Deputy Secretary, and the chief acquisition authority from the component agency with responsibility for the program. This group is supported by an investment review board (IRB) chaired by the Under Secretary for Management and composed of the Under Secretary for Science and Technology, the Assistant Secretary for Policy, and other senior DHS leadership. The IRB and the acquisition decision authority can, therefore, exercise an important, independent review of the rigor and credibility of the plans developed by the acquisition program office, ensuring that the knowledge base on which an acquisition is proceeding is sound. Without such a critical and independent review, it is too easy for planners to be captured by organizational expectations or the preferences of their supervisors, to rely too heavily on unfounded conventional wisdom within the organization, to go along with improbable assumptions rather than undertaking the difficult and unpleasant task of challenging a major program, or to fall prey to many other common biases that can result in specious, unrealistic, or poorly considered plans.

This approach is sensible, but in practice it has been hard to implement. As of September 2012, GAO reported that the IRB had not routinely reviewed projects, nor had it enforced the policy requirements for demonstrating that credible baseline planning and analysis had been developed to justify proceeding with acquisitions. Of the 71 major acquisitions that GAO had recently reviewed,

only 49 had been reviewed by the IRB even once since 2008, and 88 percent of these were permitted to proceed without the documented planning analyses required by DHS policy.[4]

In this paper, we recommend that DHS place greater emphasis on improved acquisition planning, including requiring rigorous planning and analysis as an inviolable condition of proceeding with each major acquisition. This is not an original recommendation. In testimony before Congress and in written remarks, current and former senior DHS acquisition officials—as well as GAO reviewers, the DHS Inspector General, and other oversight authorities—have highlighted the critical need for improved acquisition planning at DHS.[5] Nevertheless, we argue that improved planning is a key process determining the success of acquisitions that DHS can control and that there are specific steps DHS and Congress could take to improve acquisition planning and to better align it with acquisition best practices.

Factors Affecting Program Outcomes

Core outcome measures for major acquisition programs include whether they succeed in meeting their cost, schedule, and performance objectives. Reviews of factors contributing to poor outcomes on these measures at DHS reveal common and even predictable culprits. For instance, the recent GAO survey of 71 major acquisitions at DHS found that 68 had experienced one of three common root causes for cost growth and schedule delays:[6]

- The capabilities that the program was designed to provide changed over time because of poorly defined, unapproved, and shifting baseline performance requirements (43 programs).
- There were funding instabilities, such as reductions in a program's budget during program execution that can result from changes in missions or priorities or differences between the budget estimate and the final congressional appropriation (61 programs).
- There was an inadequate supply of a trained and qualified acquisition workforce (51 programs).

These are common sources of problems for acquisition programs. RAND has found these same factors in major acquisitions at DoD, at other federal agencies, and in private industry.[7] Other common sources of poor outcomes include the following:

- Technologies required by the system are more difficult to develop and integrate than expected.
- Expected program costs and schedule are estimated incorrectly.
- Program management and oversight processes are too rigid to respond to new information or changes in the environment.
- Outside events cause initial acquisition plans to become obsolete.
- There is a lack of stability (high turnover) in both the government and contractor workforce.
- There is a lack of program ownership and responsibility for program success, particularly with legacy programs.

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In the case of many of these common root causes, the seeds of failure can be found in the inadequacies of the original program planning and analysis. For instance, requirements often shift over the course of the project because they were not evaluated with sufficient care at the outset, or cost and schedule trade-offs were either not done correctly or were ignored.

Indeed, research has shown, in both the DoD and civilian project contexts,[8] that the quality of planning has a significant effect on program outcomes and that the factors affecting planning can be more important in determining cost, schedule, and performance outcomes than the factors affecting execution. Specifically, good planning (that is, good program formulation) establishes the validity of the needed capability, realistic (affordable and technically achievable) and well-defined requirements, technical and programmatic risks, realistic cost estimates that will be used in funding decisions and in budgeting and evaluating program execution in future years, and an acquisition strategy and risk management approach appropriately tailored to the needs and characteristics of the program. Moreover, the quality of the planning that goes into program formulation is one of the few factors affecting program

Specific factors that can undermine the quality of a program's plan (or baseline) include unrealistic cost or schedule estimates, immature technology, excessive integration or manufacturing risk, and unrealistic performance expectations.

outcomes that DHS has full control over; planning is part of a controlled internal decision process based on internally generated information.

The distinction between planning and execution factors is often used in analyses of DoD program outcomes. For instance, DoD's Performance Assessment and Root Cause Analysis (PARCA) directorate reviews all programs that have breached specified cost thresholds, using a framework that explicitly distinguishes between factors affecting planning and those that affect program execution. Specific factors that can undermine the quality of a program's plan (or baseline) include unrealistic cost or schedule estimates, immature technology, excessive integration or manufacturing risk, and unrealistic performance expectations. A number of root cause analyses conducted by RAND for PARCA have empirically tied a program's cost increases to problems with initial planning, such as setting unrealistic requirements and poorly designed acquisition strategies.[9]

Similarly, GAO reports have noted that many program execution failures have at their heart a planning failure attributable to a weak planning culture at DHS, characterized by *pro forma* planning efforts—or none at all—that offer little valid information for IRB milestone assessments. One reason for this is a DHS culture that emphasizes rapidly meeting the expressed needs of the operator for urgent missions. Approved acquisition program baselines are often missing, along with other important analysis and documentation. When analyses are documented, they have often been judged to contain cost and schedule estimates that are not credible, capability requirements analyses that are not thorough, and other shortcomings likely to threaten program success.[10]

Without credible planning that can withstand independent, objective, and critical review, such as the IRB should be provid-

ing, the government and the public are deprived of reasonable assurances that the high costs of these programs are justified by a true need for the capability, that the best technical and programmatic approaches are being used to acquire the capability, and that the expected costs and benefits of the system have been assessed appropriately. Taking examples from recent news headlines, the SBInet and BioWatch—both $1 billion or more programs—were executed in the absence of much of this information, and both have faced serious cost and performance problems.[11] Customs and Border Protection's unmanned aircraft program is another example.[12] The National Research Council noted the absence of credible assessments of strategic need for the failed Advanced Spectroscopic Portal system, as well as a poorly framed analysis of available alternatives to meeting the requirement,[13] and there are too many other examples with the same types of problems that could have been prevented without enormous investments by taxpayers. Without valid planning information, it is not possible for DHS headquarters to set meaningful performance targets or hold programs accountable for failing to meet planned targets.

Strengthening Acquisition Planning at the Department of Homeland Security

> "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."[14]

Drawing on lessons from our prior acquisition analyses and our observations of acquisitions at DHS, we believe that there are a number of things DHS can do to strengthen early program planning activities and program formulation, thereby improving the chances for better program outcomes.

Require Thorough Analysis Up Front

Programs should not be permitted to advance to the next milestone without all of the following criteria:

- rigorous **mission need analysis** leading to documentation that validates that the required capabilities are properly aligned with the DHS Strategic Plan
- a comprehensive and specific system **requirements analysis** that will give the program a chance of having stable requirements throughout the acquisition
- comprehensive **alternatives analyses** that explore the cost-performance trade-offs of different approaches to satisfying the requirements
- thorough **technology assessments** evaluating what technologies are needed and the level of maturity of those technologies in development or production at public- or private-sector organizations
- feasible, credible **program baselines**, including realistic cost, schedule, and performance estimates. Realistic estimates require that all technical and programmatic parameters are carefully defined. This is usually done in separate analyses that describe the system at a very low level of detail; the engineering, system integration, and manufacturing activities involved; and the developmental and operational test program.
- an **acquisition strategy** that brings all the elements of the program together and persuasively describes how it will be executed. The acquisition strategy should address the use of competition, the appropriate contracting strategy given the

nature of the system being acquired, and a detailed risk management plan that identifies key risks but also delineates how those risks will be managed. The acquisition strategy, which defines program execution, must be flexible enough to adapt to changes in the mission and budget environment, as well as incorporate lessons learned as the program is executed.[15]

Enforce Planning Requirements with Rigorous Milestone Reviews

Encourage quality and rigor in necessary up-front planning by consistently enforcing the requirement that programs demonstrate sufficient knowledge and understanding before proceeding with acquisitions, as laid out in DHS acquisition policy. The IRB must routinely subject all major acquisitions plans to a tough, independent review, for which it requires staff with sufficient experience to understand and challenge poor planning. Best practice in program planning includes effective oversight, at both the component and DHS headquarters levels, that ensures that all criteria for moving forward with a program have been satisfactorily demonstrated.

Incorporate Lessons from Past Problems into Current Planning

Make study of the root causes of acquisition failures and underperformance a routine activity. Conducting such assessments to establish if they are planning or execution problems would develop a lessons learned database that program managers and senior oversight officials can draw upon to ensure that the next program has a better probability of success.

Insist on Independent Acquisition Decision Authority for All Major Acquisition Programs, at Least Temporarily

Currently, DHS acquisition policies allow for acquisition decision authority to be delegated by the Under Secretary for Management to the acquisition executive within the component managing the acquisition, provided that the cost of the major acquisition is between $300 million and $1 billion. Until DHS acquisition capabilities mature, the acquisition authority at DHS headquarters should not delegate these responsibilities to components.

Build Planning Expertise in the DHS Acquisitions Workforce

Cultivate an experienced, knowledgeable acquisition workforce through innovative workforce development programs that provide training and experience with program planning. This includes appropriate education and training activities, as well as mentoring and internship programs in which individuals can learn, apply, and sharpen their skills. The workforce program could include exchange programs across components that rotate midlevel personnel through a series of programs designed to improve their problem-solving experience, as well as their ability to recognize when a program is planned and structured in a way that facilitates success.

If In-House Planning Expertise Is Thin, Get Help

As a complement to in-house planning expertise, seek available independent, objective analytic help. Where in-house analytic resources are insufficient to conduct thorough and credible planning analysis, or when independent, objective analysis is needed for credibility, draw on the deep expertise available to DHS through its own federally funded research and development centers (FFRDCs),

the FFRDCs and national laboratories working on acquisition planning with other government agencies, and private organizations with extensive experience in such planning.

Implementing Change

These changes will not be easy; DHS headquarters management controls over the components are currently weak. As is widely recognized at DHS and within Congress, the highly distributed congressional oversight of DHS components provides conflicting guidance to headquarters and components, weakening the secretary's hand in efforts to impose and enforce policies.[16] Assuming that Congress is not prepared to rationalize DHS oversight, it could still recognize the clear national interest in improved acquisitions management at DHS and rally around a set of reforms that cede more control to DHS headquarters on major acquisitions and high-risk projects. Congress should encourage DHS to seize those controls and demand improved planning as a condition of ongoing funding for major acquisitions.

However, even rationalized oversight and strengthened management controls are unlikely to succeed on their own. To lower unacceptably high acquisition risk at DHS may require changes to how DHS and its components prioritize planning and analysis in general. Currently, our observation—also a common theme in GAO reports—is that analysis is often subordinated to the opinions and preferences of operators in the field. As such, critically important analysis can become viewed as just the *pro forma* paperwork required to deliver operators their needed capabilities. This is a real problem when analysis contradicts commonly shared assumptions and is therefore ignored. Ideally, agencies can embrace

the value of truly independent and objective analysis to improve the quality of acquisition planning by providing the opportunity to improve the initial program plan and avoid costly or embarrassing mistakes, and also as an opportunity to reexamine cherished assumptions.

No such embrace of objective and independent analysis is yet evident at DHS. Indeed, whereas many of DoD's FFRDCs engaged in acquisition planning activities are permitted to widely disseminate the analyses they perform—even when the results differ from those of the acquisition authority—DHS's contracts explicitly grant DHS program managers control over the analyses conducted by DHS FFRDCs, meaning that unfavorable, embarrassing, or unexpected results may never become known to DHS headquarters, Congress, or the public.[17] Similarly, DHS's standard contracting language in its Homeland Security Acquisitions Regulations (HSAR) explicitly undermines the objectivity and independence of analytic work for which DHS contracts by providing agencies the right to prevent release of findings for any reason—not just to protect proprietary or security sensitive information, as is common at other agencies. As a result, Congress and the public are denied access to the analyses used to justify major programs.[18]

One of the consequences of this lack of transparency is that key analyses and program plans are not independently reviewed. Greater transparency, including, at a minimum, a requirement for independent review by an external organization and a commitment to publicly release planning and analysis that is not security-sensitive, would increase opportunities for effective oversight, drive improvements in the quality of analytic work at DHS, and serve other important departmental objectives. Public review, and

review by independent and objective professionals and scholars, will allow DHS to improve the quality of its planning and may help identify problems in the plans that would otherwise go unnoticed. Wider dissemination of planning analyses will help programs across the department learn from each other's experiences. In addition, public release of plans will help foster and build a more vibrant academic field of homeland security studies that will increase the talent pool available to fill DHS acquisitions and policy planning workforces.

Summary: Improving Acquisition at the Department of Homeland Security

Given the nature of the missions and the systems being acquired to address them, planning cannot be perfect and should not be expected to be. But it can be improved at DHS, which is a first step toward ensuring better program outcomes.

We recommend that DHS senior officials take several actions to improve the quality and use of acquisition planning:

- Strengthen and rationalize DHS headquarters oversight to better enforce discipline in acquisition planning.
- Better utilize objective analysis to improve planning, particularly analyses performed independently of the program or agency seeking the acquisition.
- Broaden dissemination and improve transparency of analysis and planning to ensure that senior decisionmakers have access to a full range of appropriate information and perspectives.

Improving DHS's acquisition planning capability is a critical first step in improving overall performance: It will help ensure that the cost, schedule, and performance baseline adopted at program initiation is feasible and executable.

Notes

[1] U.S. Congress, 112th Congress, *Department of Homeland Security Appropriations Bill, 2012*, Washington, D.C., Senate Report 112-74, September 7, 2011.

[2] National Security Preparedness Group, *Tenth Anniversary Report Card: The Status of the 9/11 Commission Recommendations*, Washington, D.C.: Bipartisan Policy Center, September 2011.

[3] GAO, *Homeland Security: DHS Requires More Disciplined Investment Management to Help Meet Mission Needs*, Washington, D.C., GAO-12-833, September 18, 2012b.

[4] GAO, 2012b.

[5] For example, Elaine Duke, "DHS: Why Acquisition Programs Fail—And What To Do About It," *Homeland Security Today*, December 1, 2010; U.S. House of Representatives, 110th Congress, Second Session, *Waste, Abuse and Mismanagement: Calculating the Cost of DHS Failed Contracts*, hearing before the Subcommittee on Management, Investigations, and Oversight of the Committee on Homeland Security, Washington, D.C., U.S. Government Printing Office, Serial No. 110–140, September 17, 2008; DHS Office of Inspector General, *CBP's Use of Unmanned Aircraft Systems in the Nation's Border Security*, Washington, D.C., OIG-12-85, May 2012; and GAO, 2012b.

[6] GAO, 2012b, pp. 10–11.

[7] Joseph G. Bolten, Robert S. Leonard, Mark V. Arena, Obaid Younossi, and Jerry M. Sollinger, *Sources of Weapon System Cost Growth: Analysis of 35 Major Defense Acquisition Programs*, Santa Monica, Calif.: RAND Corporation, MG-670-AF, 2008, http://www.rand.org/pubs/monographs/MG670.html; and Obaid Younossi, Mark V. Arena, Robert S. Leonard, Charles Robert Roll, Jr., Arvind Jain, and Jerry M. Sollinger, *Is Weapon System Cost Growth Increasing? A Quantitative Assessment of Completed and Ongoing Programs*, Santa Monica, Calif.: RAND Corporation, MG-588-AF, 2007, http://www.rand.org/pubs/monographs/MG588.html.

[8] See Edward W. Merrow, Lorraine M. McDonnell, and R. Yılmaz Argüden, *Understanding the Outcomes of Mega-Projects: A Quantitative Analysis of Very Large Civilian Projects*, Santa Monica, Calif.: RAND Corporation, R-3560-PSSP, 1988, http://www.rand.org/pubs/reports/R3560.html.

[9] Irv Blickstein, Michael Boito, Jeffrey A. Drezner, James Dryden, Kenneth P. Horn, James G. Kallimani, Martin C. Libicki, Megan McKernan, Roger C. Molander, Charles Nemfakos, Chad J. R. Ohlandt, Caroline Reilly, Rena Rudavsky, Jerry M. Sollinger, Katharine Watkins Webb, and Carolyn Wong, *Root Cause Analyses of Nunn-McCurdy Breaches, Volume 1: Zumwalt-Class Destroyer, Joint Strike Fighter, Longbow Apache, and Wideband Global Satellite*, Santa Monica, Calif.: RAND Corporation, MG-1171/1-OSD, 2011, http://www.rand.org/pubs/monographs/MG1171z1.html; and Irv Blickstein, Jeffrey A. Drezner, Martin C. Libicki, Brian McInnis, Megan McKernan, Charles Nemfakos, Jerry M. Sollinger, and Carolyn Wong, *Root Cause Analyses of Nunn-McCurdy Breaches, Volume 2: Excalibur Artillery Projectile and the Navy Enterprise Resource Planning Program, with an Approach to Analyzing Complexity and Risk*, Santa Monica, Calif.: RAND Corporation, MG-1171/2-OSD, 2012, http://www.rand.org/pubs/monographs/MG1171z2.html.

[10] See GAO, *Coast Guard: Portfolio Management Approach Needed to Improve Major Acquisition Outcomes*, Washington, D.C., GAO-12-918, September 20, 2012c; and GAO, 2012b.

[11] On SBInet, see, for example, GAO, *Arizona Border Surveillance Technology: More Information on Plans and Costs Is Needed Before Proceeding*, Washington, D.C., GAO-12-22, November 2011. On BioWatch, see GAO, *Biosurveillance: DHS Should Reevaluate Mission Need and Alternatives Before Proceeding with Bio-Watch Generation-3 Acquisition*, Washington, D.C., GAO-12-810, September 10, 2012a. SBInet was eventually canceled. BioWatch is still an active program but is receiving increased scrutiny from GAO and others. See "BioWatch's Many Bugs," *Los Angeles Times*, editorial, November 21, 2012.

[12] DHS Office of Inspector General, 2012.

[13] National Research Council, *Evaluating Testing, Costs, and Benefits of Advanced Spectroscopic Portals: Final Report*, Washington, D.C.: National Academies Press, 2010.

[14] GAO, *Department of Homeland Security: Assessments of Selected Complex Acquisitions*, Washington, D.C., GAO-10-588SP, June 2010, p. 20.

[15] One Defense Advanced Research Projects Agency (DARPA) program—the High Altitude Endurance Unmanned Aerial Vehicle—continuously updated the acquisition strategy as decisions were made and lessons learned during program execution and periodically (within a year) reissued the acquisition strategy. Of course, program management at DARPA is less constrained than is typical for programs at DoD or DHS. See Jeffrey A Drezner, Geoffrey Sommer, and Robert S. Leonard, *Innovative Management in the DARPA High Altitude Endurance Unmanned Aerial Vehicle Program: Phase II Experience*, Santa Monica, Calif.: RAND Corporation, MR-1054-DARPA, 1999, http://www.rand.org/pubs/monograph_reports/MR1054.html.

[16] Currently, over 100 committees and subcommittees in Congress assert oversight responsibilities for parts of DHS. In contrast, six committees account for most oversight of DoD. The result is that bills concerning DHS activities often must satisfy the conflicting demands of many uncoordinated committees. This is one

reason why DHS has never once operated under an authorization bill: Program and spending priorities have never been reconciled across committees. Instead, therefore, individual committees and members of Congress have sought authorization for component parts of DHS, such as the U.S. Coast Guard. The management challenges posed by this oversight arrangement have been highlighted by President Obama, by DHS under both the Bush and Obama administrations, by think tanks focused on improving homeland security, by the 9/11 Commission and subsequently by its members, and by members of Congress (see, for instance, Representatives Peter King and Bennie Thomson, letter to House Speaker John Boehner, Washington, D.C., January 24, 2012, http://chsdemocrats.house.gov/SiteDocuments/DHSobama.pdf).

[17] DHS uses Federal Acquisition Regulation clause 52.227-17, "Rights in Data—Special Work," and HSAR clause 3052.242.71, "Dissemination of Contract Information," as standard contracting terms, both of which prevent the dissemination of any data or information without prior written authorization from the contracting officer, but without specifying the conditions under which such authorization would be appropriately withheld.

[18] For example, see "Feds Accused of Withholding BioWatch Info," United Press International, November 15, 2012; and Bennie G. Thompson, ranking member of the House Homeland Security Committee, letter to John Pistole, administrator of the Transportation Security Administration (TSA), August 13, 2012, which complains that TSA has failed to provide cost-benefit analyses, independent effectiveness analyses, or program risk assessments for the Screening of Passengers by Observational Techniques program.

About This Perspective

Widespread cost, schedule, and performance shortfalls point to ongoing and expensive problems in the Department of Homeland Security (DHS) acquisition process. This Perspective is intended to help improve DHS acquisition management and oversight by providing a common problem definition, conceptual framework, and recommendations that DHS headquarters and component acquisition officials, as well as interested parties in Congress and related agencies, can use to improve the efficiency and effectiveness of DHS acquisition organizations.

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