

May 2007

BUSINESS SYSTEMS MODERNIZATION

DOD Needs to Fully Define Policies and Procedures for Institutionally Managing Investments



G A O

Accountability * Integrity * Reliability

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE MAY 2007		2. REPORT TYPE		3. DATES COVERED 00-00-2007 to 00-00-2007	
4. TITLE AND SUBTITLE Business Systems Modernization. DOD Needs to Fully Define Policies and Procedures for Institutionally Managing Investments				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U.S. Government Accountability Office, 441 G Street NW, Washington, DC, 20548				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES The original document contains color images.					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES 56	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			



Highlights of [GAO-07-538](#), a report to congressional committees

Why GAO Did This Study

In 1995, GAO first designated the Department of Defense's (DOD) business systems modernization program as "high-risk," and continues to do so today. In 2004, Congress passed legislation reflecting prior GAO recommendations for DOD to adopt a corporate approach to information technology (IT) business system investment management. To support GAO's legislative mandate to review DOD's efforts, GAO assessed whether the department's corporate investment management approach comports with relevant federal guidance. In doing so, GAO applied its IT Investment Management framework and associated methodology, focusing on the framework's stages related to the investment management provisions of the Clinger-Cohen Act of 1996.

What GAO Recommends

GAO recommends that DOD fully define the project and portfolio management policies and procedures discussed in GAO's framework. DOD agreed with GAO's overall conclusions and partially agreed with five of GAO's recommendations. However, DOD disagreed with the remaining four recommendations, stating that the department is, among other things, already meeting the intent of these recommendations. GAO does not agree; its recommendations focus on fully defining policies and procedures that satisfy key practices in its framework.

www.gao.gov/cgi-bin/getrpt?GAO-07-538. To view the full product, including the scope and methodology, click on the link above. For more information, contact Randolph C. Hite at (202) 512-3439 or hiter@gao.gov.

BUSINESS SYSTEMS MODERNIZATION

DOD Needs to Fully Define Policies and Procedures for Institutionally Managing Investments

What GAO Found

DOD has established the management structures needed to effectively manage its business system investments, but it has not fully defined many of the related policies and procedures that GAO's IT Investment Management framework defines. Specifically, the department has defined four of nine practices that call for project-level policies and procedures, and one of the five practices that call for portfolio-level policies and procedures (see below). For example, DOD has established an enterprisewide IT investment board responsible for defining and implementing its business system investment governance process, documented policies and procedures for ensuring that systems support ongoing and future business needs, developed procedures for identifying and collecting information about these systems to support investment selection and control, and assigned responsibility to an individual or a group for managing the development and modification of the business system portfolio selection criteria. However, DOD has not fully documented business system investment policies and procedures for directing investment board operations, selecting new investments, reselecting ongoing investments, integrating the investment funding and the investment selection processes, and developing and maintaining a complete business system investment portfolio(s).

Regarding project-level investment management practices, DOD officials said that these are performed at the component level, and that departmental policies and procedures established for overseeing components' execution of these practices are sufficient. For portfolio-level practices, however, these officials stated that they intend to improve departmental policies and procedures for business system investments by, for example, establishing a single governance structure, but plans or time frames for doing so have not been established. Until DOD fully defines departmentwide policies and procedures for both individual projects and portfolios of projects, it risks selecting and controlling these business system investments in an inconsistent, incomplete, and ad hoc manner, which in turn reduces the chances that these investments will meet mission needs in the most cost-effective manner.

Policies and Procedures for Project-Level and Portfolio-Level Management

Stage 2: Building the investment foundation	Key practices executed	Stage 3: Developing a complete investment portfolio	Key practices executed
Instituting the investment board	1/2	Defining the portfolio criteria	1/2
Meeting business needs	1/1	Creating the portfolio	0/1
Selecting an investment	0/3	Evaluating the portfolio	0/1
Providing investment oversight	0/1	Conducting postimplementation reviews	0/1
Capturing investment information	2/2		
Overall	4/9		1/5

Source: GAO.

Contents

Letter		1
	Results in Brief	3
	Background	5
	DOD Has Established the Structures Needed to Effectively Manage Business System Investments, but Has Not Fully Defined Many of the Related Policies and Procedures	22
	Conclusions	32
	Recommendations for Executive Action	32
	Agency Comments and Our Evaluation	33

Appendix I	Objective, Scope, and Methodology	40
-------------------	--	-----------

Appendix II	Comments from the Department of Defense	41
--------------------	--	-----------

Appendix III	GAO Contact and Staff Acknowledgments	51
---------------------	--	-----------

Tables		
	Table 1: DOD Business Investment Management System Entities’ Roles, Responsibilities, and Composition	16
	Table 2: DOD’s Investment Tiers	18
	Table 3: Stage 2 Critical Processes—Building the Investment Foundation	23
	Table 4: Summary of Policies and Procedures for Stage 2 Critical Processes—Building the Investment Foundation	26
	Table 5: Stage 3 Critical Processes—Developing a Complete Investment Portfolio	29
	Table 6: Summary of Policies and Procedures for Stage 3 Critical Processes—Developing a Complete Investment Portfolio	31

Figures		
	Figure 1: Simplified DOD Organizational Structure	6
	Figure 2: The Five ITIM Stages of Maturity with Critical Processes	11
	Figure 3: Working Relationships among DOD Business Investment Management System Governance Entities	17

Figure 4: Simplified Process Flow of Certification Reviews and Approvals

20

Figure 5: Simplified Process Flow of Annual Reviews

21

Abbreviations

ASD(NII)/CIO	Assistant Secretary of Defense (Networks and Information Integration)/Chief Information Officer
BEA	business enterprise architecture
BMA	business mission area
BTA	Business Transformation Agency
DAS	Defense Acquisition System
DBSAE	Defense Business Systems Acquisition Executive
DBSMC	Defense Business Systems Management Committee
DITPR	DOD Information Technology Portfolio Repository
DOD	Department of Defense
IRB	Investment Review Board
IT	information technology
ITIM	Information Technology Investment Management framework
JCIDS	Joint Capabilities Integration and Development System
MAIS	Major Automated Information System
MDAP	Major Defense Acquisition Programs
OMB	Office of Management and Budget
OSD	Office of the Secretary of Defense
PCA	pre-certification authority
PPBE	Planning, Programming, Budgeting, and Execution
USD(AT&L)	Under Secretary of Defense (Acquisition, Technology, and Logistics)

This is a work of the U.S. government and is not subject to copyright protection in the United States. It may be reproduced and distributed in its entirety without further permission from GAO. However, because this work may contain copyrighted images or other material, permission from the copyright holder may be necessary if you wish to reproduce this material separately.



United States Government Accountability Office
Washington, DC 20548

May 11, 2007

Congressional Committees

For decades, the Department of Defense (DOD) has been challenged in modernizing its timeworn business systems.¹ In 1995, we designated DOD's business systems modernization program as high risk, and we continue to designate it as such today.² As our research on public and private sector organizations shows, one essential ingredient to a successful systems modernization program is having an effective institutional approach to managing information technology (IT) investments.

In May 2001, we recommended that the department establish a corporate approach to investment control and decision making.³ Between 2001 and 2005, we reported that the department's business systems modernization program was still not being effectively managed,⁴ and we made additional investment-related recommendations. Congress subsequently included provisions in the Ronald W. Reagan National Defense Authorization Act

¹Business systems are information systems that include financial and nonfinancial systems and support DOD's business operations, such as civilian personnel, finance, health, logistics, military personnel, procurement, and transportation.

²GAO, *High-Risk Series: An Update*, [GAO-07-310](#) (Washington, D.C.: January 2007).

³GAO, *Information Technology: Architecture Needed to Guide Modernization of DOD's Financial Operations*, [GAO-01-525](#) (Washington, D.C.: May 17, 2001).

⁴See, for example, GAO, *DOD Business Systems Modernization: Long-standing Weaknesses in Enterprise Architecture Development Need to Be Addressed*, [GAO-05-702](#) (Washington, D.C.: July 22, 2005); *DOD Business Systems Modernization: Billions Being Invested without Adequate Oversight*, [GAO-05-381](#) (Washington, D.C.: Apr. 29, 2005); *DOD Business Systems Modernization: Limited Progress in Development of Business Enterprise Architecture and Oversight of Information Technology Investments*, [GAO-04-731R](#) (Washington, D.C.: May 17, 2004); *DOD Business Systems Modernization: Important Progress Made to Develop Business Enterprise Architecture, but Much Work Remains*, [GAO-03-1018](#) (Washington, D.C.: Sept. 19, 2003); *Business Systems Modernization: Summary of GAO's Assessment of the Department of Defense's Initial Business Enterprise Architecture*, [GAO-03-877R](#) (Washington, D.C.: July 7, 2003); *Information Technology: Observations on Department of Defense's Draft Enterprise Architecture*, [GAO-03-571R](#) (Washington, D.C.: Mar. 28, 2003); *DOD Business Systems Modernization: Improvements to Enterprise Architecture Development and Implementation Efforts Needed*, [GAO-03-458](#) (Washington, D.C.: Feb. 28, 2003); and [GAO-01-525](#).

for Fiscal Year 2005⁵ that reflected our recommendations, including those for establishing and implementing effective business system investment management structures and processes.

Between 2005 and 2006,⁶ we reported that DOD had made important progress in establishing and implementing these structures and processes, but that much remained to be accomplished relative to the act's requirements. For example, we reported that the department's business system investment approach was not institutionalized at all levels of the department.

To support GAO's legislative mandate to review DOD's annual report on its business systems modernization program, and as agreed with your offices, the objective of this review was to determine whether DOD's corporate investment management approach comports with relevant federal guidance. To accomplish our objective, we analyzed documents and interviewed agency officials to determine whether DOD has developed the structures, policies, and procedures associated with executing those key practices in our IT Investment Management (ITIM) framework that assist organizations in complying with the investment management provisions of the Clinger-Cohen Act of 1996.⁷ This framework provides a hierarchical maturity model for IT investment management and a method for evaluating and assessing the maturity of an agency's investment management. We performed our work at DOD headquarters in Arlington, Virginia, from August 2006 through April 2007 in accordance with generally accepted government auditing standards. Details on our objective, scope, and methodology are contained in appendix I.

⁵Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005, Pub. L. No. 108-375, § 332, 118 Stat. 1811, 1851-1856 (Oct. 28, 2004) (codified in part at 10 U.S.C. § 2222).

⁶GAO, *Defense Business Transformation: A Comprehensive Plan, Integrated Efforts, and Sustained Leadership Are Needed to Assure Success*, [GAO-07-229T](#) (Washington, D.C.: Nov. 16, 2006); *Business Systems Modernization: DOD Continues to Improve Institutional Approach, but Further Steps Needed*, [GAO-06-658](#) (Washington, D.C.: May 15, 2006); and *DOD Business Systems Modernization: Important Progress Made in Establishing Foundational Architecture Products and Investment Management Practices, but Much Work Remains*, [GAO-06-219](#) (Washington, D.C.: Nov. 23, 2005).

⁷GAO, *Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity*, [GAO-04-394G](#) (Washington, D.C.: March 2004).

Results in Brief

DOD has established the management structures needed to effectively manage its business system investments, but it has not fully defined many of the related policies and procedures that our framework defines. Specifically, DOD has fully defined four of nine key practices that call for project-level policies and procedures, and one of the five practices that call for portfolio-level policies and procedures. For example, regarding project-level investment, the department has (1) established an enterprisewide investment board and subordinate boards that are responsible for business system investment governance, (2) documented policies and procedures for ensuring that systems support ongoing and future business needs, (3) developed procedures for identifying and collecting information about these systems to support investment selection and control, and (4) assigned responsibility for ensuring that the information collected during project identification meets the needs of the investment management process. Regarding portfolio-based investment, DOD has assigned responsibility to the Under Secretary of Defense for Acquisition, Technology, and Logistics for managing business system portfolio selection criteria.

However, DOD has not fully documented business system investment policies and procedures related to five key project-level management practices. For example, policies and procedures do not (1) define how the investment selection, acquisition, and funding processes are coordinated; (2) specify how the full range of cost, schedule, and benefit data accessible by the Investment Review Boards (IRB) are to be used in making selection (i.e., certification) decisions; (3) specify how reselection decisions at the corporate level (i.e., annual review decisions) consider investments that are in operations and maintenance; (4) describe how funding decisions are integrated with the process of selecting an investment at the corporate level; and (5) provide sufficient oversight and visibility into component-level investment management activities, including component reviews of systems in operations and maintenance. Furthermore, DOD does not have documented policies and procedures for (1) defining the portfolio criteria, (2) creating the portfolio, (3) evaluating the portfolio, and (4) conducting postimplementation reviews for all business systems.

Regarding project-level investment management practices, DOD officials stated that these are performed at the component level, and that departmental policies and procedures established for overseeing execution of these practices by components are sufficient. Regarding portfolio-level practices, however, these officials stated that they intend to improve departmental policies and procedures for business system investments by, for example, establishing a single governance structure,

but plans or time frames for doing so have not been established. According to our ITIM framework, adequately documenting both the policies and the associated procedures that govern how an organization manages its IT investment portfolio(s) is important because doing so provides the basis for having rigor, discipline, and repeatability in how investments are selected and controlled across the entire organization. Until DOD fully defines departmentwide policies and procedures for both individual projects and portfolios of projects, it risks selecting and controlling these business system investments in an inconsistent, incomplete, and ad hoc manner, which in turn reduces the chances that these investments will meet mission needs in the most cost-effective manner.

To strengthen DOD's business system investment management capability, we are recommending that the department fully define the policies and procedures associated with project-level and portfolio-level investment management as discussed in our guidance for IT investment management.⁸

In written comments on a draft of this report, signed by the Deputy Under Secretary of Defense (Business Transformation) and reprinted in appendix II, the department stated that it agreed with the report's overall conclusions, and it described efforts under way and planned that it said would address many of the gaps identified in the report. In this regard, the department partially concurred with five of the report's recommendations, adding that our recommendations and feedback are helpful in guiding DOD's business transformation and related improvement efforts.

However, the department disagreed with the remaining four recommendations for two primary reasons. First, it stated that its existing investment management structure already satisfies the intent of these recommendations. For example, it stated that its policies already require the provision of cost, schedule, and funding data as part of investment certifications and annual reviews, and that a linkage currently exists among the investment selection, acquisition, and funding processes. We do not agree with this reasoning. Our recommendations are not intended to address whether existing policies or guidance provide for the use of cost, schedule, and funding data, or whether they state that investment selection, acquisition, and funding decision making are linked. Rather, our recommendations address the definitions of policy, guidance, and supporting procedures that fall short of satisfying the best practices

⁸[GAO-04-394G](#).

embodied in our ITIM framework. In the case of the above examples, while we do not question whether investment data are provided to investment decision-making bodies, the department's policies and procedures do not include specific decision criteria that explain how these data are to be used to make consistent, repeatable selection and reselection decisions across all investments. Furthermore, while we do not question that existing guidance contains an illustration depicting a link between investment certification and review and other DOD decision support processes, including the funding process, neither this guidance nor supporting procedures define how this linkage is executed (i.e., how investment funding decisions are in fact integrated with investment selection decisions).

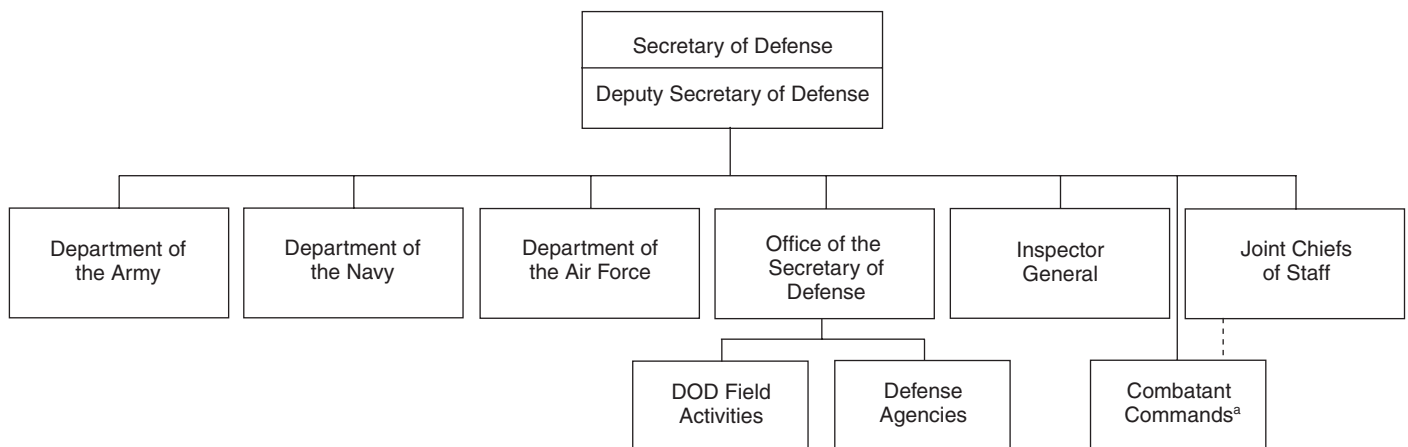
Second, DOD stated that our recommendations contradict the department's "tiered accountability" approach to investment management, in which responsibility and accountability for business system investment management is allocated between the Office of the Secretary of Defense (corporate level) and DOD components (subsidiary levels) on the basis of investment size and significance. We do not agree with the department's reasoning. We support DOD's tiered accountability concept because it is consistent with the hierarchical investment structures described in our ITIM framework. Under the department's current policies and guidance, however, most DOD investments are not subject to corporate visibility and oversight, either because they do not involve development/modernization (i.e., they are in operations and maintenance) or because they do not exceed a certain dollar threshold. Our framework recognizes that effective implementation of this concept should include appropriate corporate visibility into and oversight of investments, either through review and approval of those investments that meet certain criteria or through awareness of a subordinate board's investment management activities. Moreover, this visibility and oversight should extend to the entire portfolio of investments, including those that are in operations and maintenance. To ensure that this occurs, applicable policies and procedures need to explicitly cover all such investments and need to define how this is to be accomplished.

Background

DOD is a massive and complex organization. To illustrate, the department reported that its fiscal year 2006 operations involved approximately \$1.4 trillion in assets and \$2.0 trillion in liabilities, more than 2.9 million military and civilian personnel, and \$581 billion in net cost of operations. To date, for fiscal year 2007, the department received appropriations of about \$501 billion. Organizationally, the department includes the Office of

the Secretary of Defense (OSD), the Chairman of the Joint Chiefs of Staff, the military departments, numerous defense agencies and field activities, and various unified combatant commands that are responsible for either specific geographic regions or specific functions. (See fig. 1 for a simplified depiction of DOD's organizational structure.)

Figure 1: Simplified DOD Organizational Structure



Source: GAO based on DOD documentation.

^aThe Chairman of the Joint Chiefs of Staff serves as the spokesman for the commanders of the combatant commands, especially on the administrative requirements of their commands.

In support of its military operations, the department performs an assortment of interrelated and interdependent business functions, including logistics management, procurement, health care management, and financial management. As we have previously reported,⁹ the systems environment that supports these business functions is overly complex and error-prone, and is characterized by (1) little standardization across the department, (2) multiple systems performing the same tasks, (3) the same data stored in multiple systems, and (4) the need for data to be entered manually into multiple systems. Moreover, according to DOD, this systems environment is comprised of approximately 3,100 separate business systems. For fiscal year 2007, Congress appropriated approximately \$15.7 billion to DOD, and for fiscal year 2008, DOD has requested about \$15.9 billion in appropriated funds to operate, maintain, and modernize these business systems and the associated infrastructures.

⁹[GAO-06-658](#).

As we have previously reported,¹⁰ the department's nonintegrated and duplicative systems impair DOD's ability to combat fraud, waste, and abuse. In fact, DOD currently bears responsibility, in whole or in part, for 15 of our 27 high-risk areas.¹¹ Eight of these areas are specific to DOD,¹² and the department shares responsibility for 7 other governmentwide high-risk areas.¹³ DOD's business systems modernization is one of the high-risk areas, and it is an essential enabler to addressing many of the department's other high-risk areas. For example, modernized business systems are integral to the department's efforts to address its financial, supply chain, and information security management high-risk areas.

IT Investment Management Is Critical to Achieving Successful Systems Modernization

A corporate approach to IT investment management is characteristic of successful public and private organizations. Recognizing this, Congress enacted the Clinger-Cohen Act of 1996,¹⁴ which requires the Office of Management and Budget (OMB) to establish processes to analyze, track, and evaluate the risks and results of major capital investments in IT systems made by executive agencies.¹⁵ In response to the Clinger-Cohen Act and other statutes, OMB has developed policy and issued guidance for the planning, budgeting, acquisition, and management of federal capital

¹⁰See, for example, GAO, *DOD Travel Cards: Control Weaknesses Resulted in Millions of Dollars of Improper Payments*, [GAO-04-576](#) (Washington, D.C.: June 9, 2004); *Military Pay: Army National Guard Personnel Mobilized to Active Duty Experienced Significant Pay Problems*, [GAO-04-89](#) (Washington, D.C.: Nov. 13, 2003); and *Defense Inventory: Opportunities Exist to Improve Spare Parts Support Aboard Deployed Navy Ships*, [GAO-03-887](#) (Washington, D.C.: Aug. 29, 2003).

¹¹[GAO-07-310](#).

¹²These 8 high-risk areas include DOD's (1) overall approach to business transformation, (2) business systems modernization, (3) financial management, (4) personnel security clearance program, (5) supply chain management, (6) support infrastructure management, (7) weapon systems acquisition, and (8) contract management.

¹³The 7 governmentwide high-risk areas are (1) disability programs, (2) ensuring the effective protection of technologies critical to U.S. national security interests, (3) interagency contracting, (4) information systems and critical infrastructure, (5) information-sharing for homeland security, (6) human capital, and (7) real property.

¹⁴The Clinger-Cohen Act of 1996, 40 U.S.C. §§ 11101-11704. This act expanded the responsibilities of OMB and the agencies that had been set under the Paperwork Reduction Act with regard to IT management. See 44 U.S.C. 3504(a)(1)(B)(vi) (OMB); and 44 U.S.C. 3506(h)(5) (agencies).

¹⁵We have made recommendations to improve OMB's process for monitoring high-risk IT investments; see GAO, *Information Technology: OMB Can Make More Effective Use of Its Investment Reviews*, [GAO-05-276](#) (Washington, D.C.: Apr. 15, 2005).

IT Investment Management: A Brief Description

assets.¹⁶ We have also issued guidance in this area,¹⁷ which defines institutional structures, such as the IRBs; processes for developing information on investments (such as costs and benefits); and practices to inform management decisions (such as whether a given investment is aligned with an enterprise architecture).

IT investment management is a process for linking IT investment decisions to an organization's strategic objectives and business plans. Consistent with this, the federal approach to IT investment management focuses on selecting, controlling, and evaluating investments in a manner that minimize risks while maximizing the return of investment.¹⁸

- During the selection phase, the organization (1) identifies and analyzes each project's risks and returns before committing significant funds to any project and (2) selects those IT projects that will best support its mission needs.
- During the control phase, the organization ensures that projects, as they develop and investment expenditures continue, meet mission needs at the expected levels of cost and risk. If the project is not meeting expectations or if problems arise, steps are quickly taken to address the deficiencies.
- During the evaluation phase, expected results are compared with actual results after a project has been fully implemented. This comparison is done to (1) assess the project's impact on mission performance, (2) identify any changes or modifications to the project that may be

¹⁶This policy is set forth and guidance is provided in OMB Circular A-11 (Nov. 2, 2005) (section 300), and in OMB's *Capital Programming Guide*, which directs agencies to develop, implement, and use a capital programming process to build their capital asset portfolios.

¹⁷See, for example, [GAO-04-394G](#); GAO, *Information Technology: A Framework for Assessing and Improving Enterprise Architecture Management (Version 1.1)*, [GAO-03-584G](#) (Washington, D.C.: April 2003); and *Assessing Risks and Returns: A Guide for Evaluating Federal Agencies' IT Investment Decision-making*, [GAO/AIMD-10.1.13](#) (Washington, D.C.: February 1997).

¹⁸[GAO-04-394G](#); [GAO/AIMD-10.1.13](#); GAO, *Executive Guide: Improving Mission Performance Through Strategic Information Management and Technology*, [GAO/AIMD-94-115](#) (Washington, D.C.: May 1994); and Office of Management and Budget, *Evaluating Information Technology Investments, A Practical Guide* (Washington, D.C.: November 1995).

needed, and (3) revise the investment management process based on lessons learned.

Overview of GAO's ITIM Maturity Framework

Our ITIM framework consists of five progressive stages of maturity for any given agency relative to selecting, controlling, and evaluating its investment management capabilities.¹⁹ (See fig. 2 for the five ITIM stages of maturity.) This framework is grounded in our research of IT investment management practices of leading private and public sector organizations. The maturity stages are cumulative; that is, to attain a higher stage, an agency must institutionalize all of the critical processes at the lower stages, in addition to the higher stage critical processes.

The framework can be used to assess the maturity of an agency's investment management processes and as a tool for organizational improvement. The overriding purpose of the framework is to encourage investment selection and control and to evaluate processes that promote business value and mission performance, reduce risk, and increase accountability and transparency. We have used the framework in several of our evaluations,²⁰ and a number of agencies have adopted it.

With the exception of the first stage, each maturity stage is composed of "critical processes" that must be implemented and institutionalized for the organization to achieve that stage. Each ITIM critical process consists of "key practices"—to include organizational structures, policies, and procedures—that must be executed to implement the critical process. It is not unusual for an organization to perform key practices from more than one maturity stage at the same time. However, our research shows that agency efforts to improve investment management capabilities should

¹⁹GAO-04-394G.

²⁰GAO, *Information Technology: Centers for Medicare & Medicaid Services Needs to Establish Critical Investment Management Capabilities*, GAO-06-12 (Washington, D.C.: Oct. 28, 2005); *Information Technology: HHS Has Several Investment Management Capabilities in Place, but Needs to Address Key Weaknesses*, GAO-06-11 (Washington, D.C.: Oct. 28, 2005); *Information Technology: FAA Has Many Investment Management Capabilities in Place, but More Oversight of Operational Systems Is Needed*, GAO-04-822 (Washington, D.C.: Aug. 20, 2004); *Bureau of Land Management: Plan Needed to Sustain Progress in Establishing IT Investment Management Capabilities*, GAO-03-1025 (Washington, D.C.: Sept. 12, 2003); *Information Technology: Departmental Leadership Crucial to Success of Investment Reforms at Interior*, GAO-03-1028 (Washington, D.C.: Sept. 12, 2003); *United States Postal Service: Opportunities to Strengthen IT Investment Management Capabilities*, GAO-03-3 (Washington, D.C.: Oct. 15, 2002); and *Information Technology: DLA Needs to Strengthen Its Investment Management Capability*, GAO-02-314 (Washington, D.C.: Mar. 15, 2002).

focus on implementing all lower-stage practices before addressing higher-stage practices.

In the ITIM framework, Stage 2 critical processes lay the foundation by establishing successful, predictable, and repeatable investment control processes at the project level. At this stage, the emphasis is on establishing basic capabilities for selecting new IT projects; controlling projects so that they finish predictably within the established cost, schedule, and performance expectations; and identifying and mitigating exposure to risk.

Stage 3 is where the agency moves from project-centric processes to portfolio-based processes and evaluates potential investments according to how well they support the agency's missions, strategies, and goals. This stage focuses on continually assessing both proposed and ongoing projects as part of complete investment portfolios—integrated and competing sets of investment options. It also focuses on maintaining mature, integrated selection (and reselection); control; and postimplementation evaluation processes. This portfolio perspective allows decision makers to consider the interaction among investments and the contributions to organizational mission goals and strategies that could be made by alternative portfolio selections, rather than to focus exclusively on the balance between the costs and benefits of individual investments. Organizations implementing Stages 2 and 3 practices have in place capabilities that assist in establishing selection, control, and evaluation structures, policies, procedures, and practices that are required by the investment management provisions of the Clinger-Cohen Act.²¹

Stages 4 and 5 require the use of evaluation techniques to continuously improve both investment processes and portfolios to better achieve strategic outcomes. At Stage 4, an organization has the capacity to conduct IT succession activities and, therefore, can plan and implement the deselection of obsolete, high-risk, or low-value IT investments. An organization with Stage 5 maturity conducts proactive monitoring for breakthrough technologies that will enable it to change and improve its business performance.

²¹The Clinger-Cohen Act of 1996, 40 U.S.C. §§ 11311-11313.

Figure 2: The Five ITIM Stages of Maturity with Critical Processes

Maturity stages	Critical processes
Stage 5: Leveraging IT for strategic outcomes	- Optimizing the investment process - Using IT to drive strategic business change
Stage 4: Improving the investment process	- Improving the portfolio's performance - Managing the succession of information systems
Stage 3: Developing a complete investment portfolio	- Defining the portfolio criteria - Creating the portfolio - Evaluating the portfolio - Conducting postimplementation reviews
Stage 2: Building the investment foundation	- Instituting the investment board - Meeting business needs - Selecting an investment - Providing investment oversight - Capturing investment information
Stage 1: Creating investment awareness	<i>IT spending without disciplined investment processes</i>

Source: GAO.

Overview of DOD's Corporate Approach for Identifying, Funding, and Acquiring All System Investments

DOD's major system investments (i.e., weapon and business systems) are governed by three management systems—the Joint Capabilities Integration and Development System (JCIDS); the Planning, Programming, Budgeting, and Execution (PPBE) system; and the Defense Acquisition System (DAS).

- JCIDS is a need-driven, capabilities-based approach to identify warfighting needs and meet future joint forces challenges. It is intended to identify future capabilities for DOD; address capability gaps and mission needs recognized by the Joint Chiefs of Staff or derived from strategic guidance, such as the National Security Strategy Report²² or Quadrennial Defense Review;²³ and identify alternative solutions by considering a range of doctrine, organization, training, materiel, leadership and education, personnel, and facilities solutions. According to DOD, the Joint Chiefs of

²²The National Security Strategy Report required by 50 U.S.C. 404a is a comprehensive report on the national security strategy of the United States submitted by the President to Congress.

²³See 10 U.S.C. 118. The Quadrennial Defense Review is a comprehensive examination of the national defense strategy, force structure, force modernization plans, infrastructure, budget plan, and other elements of the defense program and policies of the United States with a view toward determining and expressing the defense strategy of the United States and establishing a defense program for the next 20 years.

Staff, through the Joint Requirements Oversight Council, has primary responsibility for defining and implementing JCIDS.

- PPBE is a calendar-driven approach that is composed of four phases that occur over a moving 2-year cycle. The four phases—planning, programming, budgeting, and executing—define how budgets for each DOD component and the department as a whole are created, vetted, and executed. As recently reported,²⁴ the components start programming and budgeting for addressing a JCIDS-identified capability gap or mission need several years before actual product development under DAS begins, and before OSD formally reviews the components' programming and budgeting proposals (i.e., Program Objective Memorandums). Once reviewed and approved, the financial details in the Program Objective Memorandums become part of the President's budget request to Congress. During budget execution, components may submit program change proposals or budget change proposals, or both (e.g., program cost increases or schedule delays). According to DOD, the OSD Under Secretary of Defense (Policy), the Director for Program Analysis and Evaluation,²⁵ and the Under Secretary of Defense (Comptroller) have primary responsibility for defining and implementing the PPBE system.
- DAS is described in the DOD Directive 5000.1 and the DOD Instruction 5000.2²⁶ and establishes the procedures for the Defense Acquisition Management Framework, which consists of three event-based milestones associated with five key program life-cycle phases. These five phases are as follows:
 1. *Concept Refinement*: Intended to refine the initial JCIDS-validated system solution (concept) and create a strategy for acquiring the investment solution. A decision is made at the end of this phase (milestone A decision) regarding whether to move to the next phase (Technology Development).

²⁴GAO, *Best Practices: An Integrated Portfolio Management Approach to Weapon System Investments Could Improve DOD's Acquisition Outcomes*, [GAO-07-388](#) (Washington, D.C.: Mar. 30, 2007).

²⁵The Director for Program Analysis and Evaluation is the principal staff assistant who conducts independent analysis for, and provides independent advice on, all DOD program and evaluation matters to the Secretary and Deputy Secretary of Defense.

²⁶DOD Directive 5000.1, May 12, 2003 and DOD Instruction 5000.2, May 12, 2003.

-
2. *Technology Development*: Intended to determine the appropriate set of technologies to be integrated into the investment solution by iteratively assessing the viability of various technologies while simultaneously refining user requirements. Once the technology has been demonstrated in a relevant environment, a decision is made at the end of this phase (milestone B decision) regarding whether to move to the next phase (System Development and Demonstration).
 3. *System Development and Demonstration*: Intended to develop a system or a system increment and demonstrate through developer testing that the system/system increment can function in its target environment. A decision is made at the end of this phase (milestone C decision) regarding whether to move to the next phase (Production and Deployment).
 4. *Production and Deployment*: Intended to achieve an operational capability that satisfies the mission needs, as verified through independent operational test and evaluation, and ensures that the system is implemented at all applicable locations.
 5. *Operations and Support*: Intended to operationally sustain the system in the most cost-effective manner over its life cycle.

A key principle of DAS is that investments are assigned a category, where programs of increasing dollar value and management interest are subject to more stringent oversight. For example, Major Defense Acquisition Programs (MDAP)²⁷ and Major Automated Information Systems (MAIS)²⁸ are large, expensive programs subject to the most extensive statutory and regulatory reporting requirements and, unless delegated, are reviewed by acquisition boards at the DOD corporate level. Smaller and less risky acquisitions are generally reviewed at the component executive or lower levels. Another key principle is that DAS requires acquisition management

²⁷ A MDAP is an acquisition program that is estimated by the Under Secretary of Defense for Acquisition, Technology, and Logistics to require an eventual total expenditure for research, development, and test and evaluation of more than \$365 million (fiscal year 2000 constant dollars) or, for procurement, of more than \$2.190 billion (fiscal year 2000 constant dollars).

²⁸ A MAIS is a program or initiative that is so designated by the Assistant Secretary of Defense (Networks and Information Integration)/Chief Information Officer or that is estimated to require program costs in any single year in excess of \$32 million (fiscal year 2000 constant dollars), total program costs in excess of \$126 million (fiscal year 2000 constant dollars), or total life-cycle costs in excess of \$378 million (fiscal year 2000 constant dollars).

under the direction of a milestone decision authority.²⁹ The milestone decision authority—with support from the program manager and advisory boards, such as the Defense Acquisition Board³⁰ and the IT Acquisition Board³¹—determines the project’s baseline cost, schedule, and performance commitments. The Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) has primary responsibility for defining and implementing DAS.

DOD Business System Investments Are Subject to a Fourth Management System

DOD’s business system investments are also governed by a fourth management system that addresses how these investments are reviewed, certified, and approved for compliance with the business enterprise priorities and activities outlined by the business enterprise architecture (BEA). For the purposes of this report, we refer to this fourth management system as the Business Investment Management System. This fourth management system is described in the following text in terms of governance entities, tiered accountability, and business system investment certification reviews and approvals. According to DOD, these four management systems are the means by which DOD selects, controls, and evaluates its business system investments.

Business System Investment Roles and Responsibilities

In 2005, the department reassigned responsibility for providing executive leadership for the direction, oversight, and execution of its business systems modernization efforts to several entities. These entities and their responsibilities include the following:

²⁹ According to DOD, the milestone decision authority is the designated individual who has overall responsibility for an investment. This person has the authority to approve an investment’s progression in the acquisition process and is responsible for reporting cost, schedule, and performance results. For example, the milestone decision authority for a MDAP program, when not delegated to the component level, is the Under Secretary of Defense for Acquisition, Technology, and Logistics, and the milestone decision authority for a MAIS system is the Assistant Secretary of Defense (Networks and Information Integration)/Chief Information Officer or a designee.

³⁰ The Defense Acquisition Board, chaired by the Under Secretary of Defense for Acquisition, Technology, and Logistics, conducts reviews for MDAPs at major program milestones and documents the decision(s) resulting from the review in an Acquisition Decision Memorandum.

³¹ The IT Acquisition Board, chaired by the Assistant Secretary of Defense (Networks and Information Integration)/Chief Information Officer, conducts reviews for MAIS at major program milestones and documents the decision(s) resulting from the review in an Acquisition Decision Memorandum.

-
- The Defense Business Systems Management Committee (DBSMC) serves as the highest-ranking governance body for business systems modernization activities.
 - The Principal Staff Assistants serve as the certification authorities for business system modernizations in their respective core business missions.
 - The IRBs are chartered by the Principal Staff Assistants and are the review and decision-making bodies for business system investments in their respective areas of responsibility.³²
 - The component pre-certification authority (PCA) is accountable for the component's business system investments and acts as the component's principal point of contact for communication with the IRBs.
 - The Business Transformation Agency (BTA) is responsible for leading and coordinating business transformation efforts across the department. The BTA is organized into seven directorates, one of which is the Defense Business Systems Acquisition Executive (DBSAE)—the component acquisition executive for DOD enterprise-level (DOD-wide) business systems and initiatives. This directorate is responsible for developing, coordinating, and integrating enterprise-level projects, programs, systems, and initiatives—including managing resources such as fiscal, personnel, and contracts for assigned systems and programs.

Table 1 lists these entities and provides greater detail on their roles, responsibilities, and composition. Figure 3 provides a simplified illustration of the relationships among these entities.

³²The four IRBs are for (1) Financial Management, established by the Deputy Under Secretary of Defense for Financial Management; (2) Weapon Systems Lifecycle Management and Materiel Supply and Services Management; (3) Real Property and Installations Lifecycle Management, both established by the USD(AT&L); and (4) Human Resources Management, established by the Under Secretary of Defense for Personnel and Readiness.

Table 1: DOD Business Investment Management System Entities' Roles, Responsibilities, and Composition

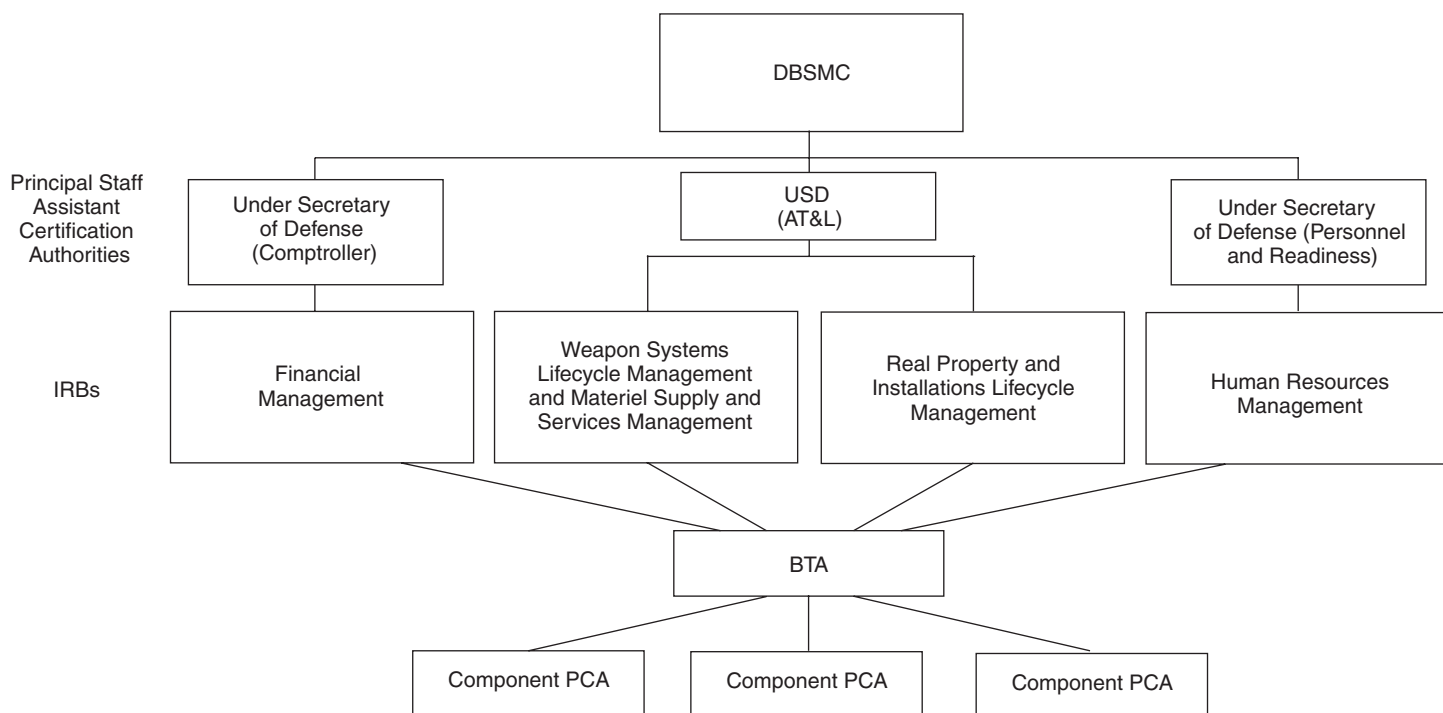
Entity	Roles and responsibilities	Composition
DBSMC	- Serves as approving authority for business system certifications. - Establishes policies and approves the business mission area (BMA)^a strategic plan, the transition plan for implementation for business systems modernization, the transformation program baseline, and the BEA.	Chaired by the Deputy Secretary of Defense; vice chair is the USD(AT&L). Includes senior leadership in OSD; the military departments' secretaries; and defense agencies' heads, such as the Assistant Secretary of Defense (Networks and Information Integration)/Chief Information Officer (ASD(NII)/CIO), the Vice Chairman of the Joint Chiefs of Staff, and the commanders of the U.S. Transportation Command and the Joint Forces Command.
Principal Staff Assistants/ Certification Authorities	- Support the DBSMC's management of enterprise business IT investments. - Serve as the certification authorities accountable for the obligation of funds for respective business systems modernization within designated core business missions.^b - Provide the DBSMC with recommendations for system investment approval.	Under Secretaries of Defense for Acquisition, Technology, and Logistics; Comptroller; and Personnel and Readiness.
IRBs	- Serve as the oversight and investment decision-making bodies for those business capabilities that support activities under their designated areas of responsibility. - Recommend certification for all business system investments costing more than \$1 million that are integrated and compliant with the BEA.	Includes the Principal Staff Assistants, Joint Staff, ASD(NII)/CIO, core business mission area representatives, military departments, defense agencies, and combatant commands.
Component PCA	- Ensures that component-level investment review processes integrate with the investment management system. - Identifies those component systems that require IRB certification and prepares, reviews, approves, validates, and transfers investment documentation as required. - Assesses and precertifies architecture compliance of component systems submitted for certification and annual review. - Acts as the component's principal point of contact for communication with the IRBs.	Includes the Chief Information Officer from the Air Force; the Principal Director of Governance, Acquisition, and Chief Knowledge Office from the Army; the Chief Information Officer from the Navy; and comparable representatives from other defense agencies.
BTA	- Serves as the day-to-day management entity of the business transformation effort at the DOD enterprise level. - Provides support to the DBSMC and the IRBs. - Operates under the authority of the USD(AT&L) under the direction of the Deputy Under Secretary of Defense for Business Transformation and the Deputy Under Secretary of Defense for Financial Management.	Comprised of seven directorates (DBSAE, Enterprise Integration, Transformation Planning and Performance, Transformation Priorities and Requirements, Investment Management, Warfighter Support Office, and Chief of Staff).

Source: GAO based on DOD documentation.

^aAccording to DOD, the BMA is responsible for ensuring that capabilities, resources, and materiel are reliably delivered to the warfighter. Specifically, the BMA addresses areas such as real property and human resources management.

^bDOD has five core business missions: Human Resources Management, Weapon System Lifecycle Management, Materiel Supply and Services Management, Real Property and Installations Lifecycle Management, and Financial Management.

Figure 3: Working Relationships among DOD Business Investment Management System Governance Entities



Source: GAO based on DOD documentation.

Tiered Accountability

According to DOD, in 2005 it adopted a tiered accountability approach to business transformation. Under this approach, responsibility and accountability for business investment management is allocated between the DOD corporate (i.e., OSD) and the components on the basis of the amount of development/modernization funding involved and the investment's "tier." DOD corporate is responsible for ensuring that all business systems with a development/modernization investment in excess of \$1 million are reviewed by the IRBs for compliance with the BEA, certified by the Principal Staff Assistants, and approved by the DBSMC. Components are responsible for certifying development/modernization investments with total costs of \$1 million or less. All DOD development

Business Investment Certification Reviews and Approvals

and modernization efforts are also assigned a tier on the basis of the acquisition category or the size of the financial investment, or both. According to DOD, a system is given a tier designation when it passes through the certification process. Table 2 describes the four investment tiers and identifies the associated reviewing and approving entities.

Table 2: DOD’s Investment Tiers

	Tier description	Reviewing/Approving entities
Tier 1	MAIS and MDAPs	IRB and DBSMC
Tier 2	Exceeding \$10 million in total development/modernization costs, but not designated MAIS or MDAPs	IRB and DBSMC
Tier 3	Exceeding \$1 million and up to \$10 million in total development/modernization costs	IRB and DBSMC
Tier 4	Investment funding required up to \$1 million	Component-level review only (<i>unless the system or line of business it supports is designated as special interest by the Certification Authority</i>)

Source: DOD.

DOD’s business investment management system includes two types of reviews for business systems: certification and annual reviews. Certification reviews apply to new modernization projects with total cost over \$1 million. This review focuses on program alignment with the BEA and must be completed before components obligate funds for programs. The annual review applies to all business programs. The focus for the annual review is to determine whether the system development effort is meeting its milestones and addressing its IRB certification conditions.

Certification reviews and approvals: Tiers 1 through 3 business system investments are certified at two levels—component-level precertification and corporate-level certification and approval. At the component level, program managers prepare, enter, maintain, and update information about their investments in the DOD IT Portfolio Repository (DITPR),³³ such as regulatory compliance reporting, an architectural profile, and requirements for investment certification and annual reviews. The

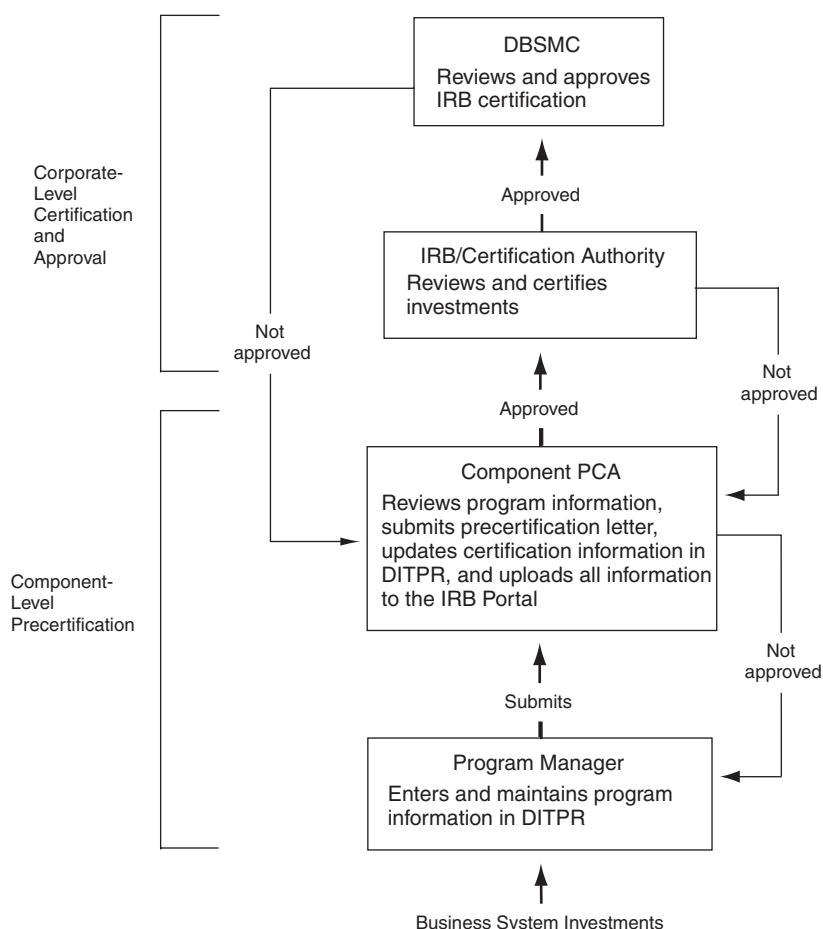
³³DITPR is DOD’s authoritative repository for certain information about DOD’s business systems, such as system names and the responsible DOD components, that are required for the certification, approval, and annual reviews of these business system investments.

component PCA validates that the system information is complete and accessible on the IRB Portal, reviews system compliance with the BEA and enterprise transition plan, and verifies the economic viability analysis. The PCA asserts the status and validity of the investment information by submitting a component precertification letter to the appropriate IRB for its review.

At the corporate level, the IRB reviews the system information and precertification letter submitted by the PCA to determine whether to recommend investment certification. On completion of its review, a certification memorandum is prepared and signed by the designated certification authority³⁴ that documents the IRB's system certification decisions and any related conditions. The memorandum is then forwarded to the DBSMC, which either approves or disapproves the IRB's decisions and issues a memorandum containing its decisions. If the DBSMC disapproves a system investment, it is up to the component PCA to decide whether to resubmit the investment after it has resolved the relevant issues. Figure 4 provides a simplified overview of the process flow of certification reviews and approvals.

³⁴The certification authority is the designated Principal Staff Assistant with responsibility for review, approval, and oversight of the planning, design, acquisition, deployment, operation, maintenance, and modernization of defense business systems.

Figure 4: Simplified Process Flow of Certification Reviews and Approvals



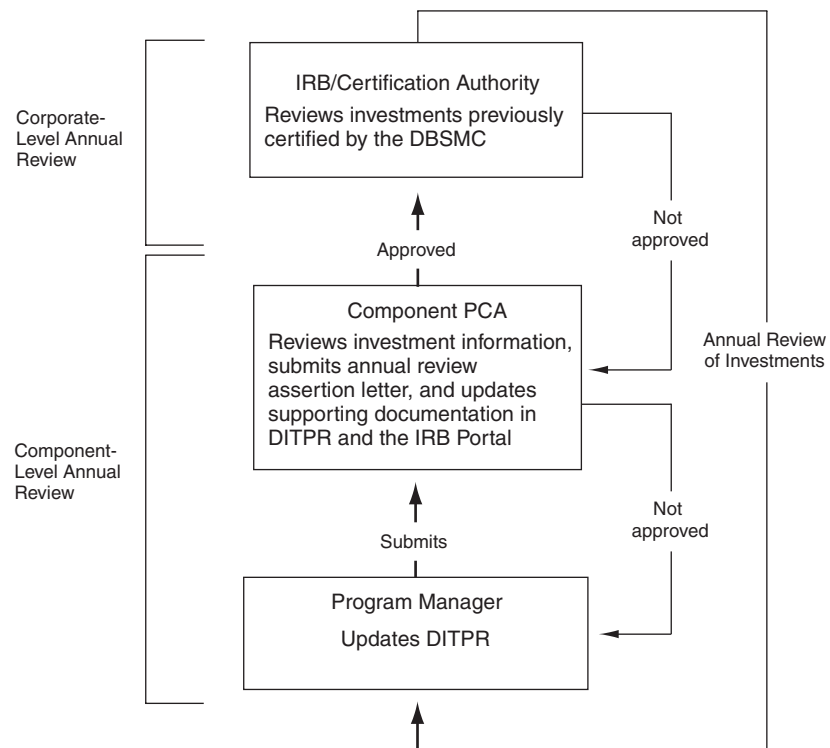
Source: GAO based on DOD documentation.

Annual reviews: Tiers 1 through 4 business system investments are annually reviewed at two levels—the component level and the corporate level. At the component level, program managers review and update information on all tiers of investments, both in modernization and operations and maintenance, on an annual basis in DITPR. The updates for Tiers 1 through 3 with system development/modernization include cost, milestone, and risk variances and actions or issues related to certification conditions. The PCA then verifies and submits the information for Tiers 1 through 3 systems in development/modernization for IRB review in an annual review assertion letter. The letter addresses system compliance

with the BEA and the enterprise transition plan, and includes investment cost, schedule, and performance information.³⁵

At the corporate level, the IRBs annually review certified Tiers 1 through 3 investments in development/modernization. These reviews focus on program compliance with the BEA, program performance against cost and milestone baselines, and progress in meeting certification conditions. The IRBs can revoke an investment's certification when the system has significantly failed to achieve performance commitments (i.e., capabilities and costs). When this occurs, the component must address the IRB's concerns and resubmit the investment for certification. Figure 5 shows a simplified overview of the process flow of annual reviews.

Figure 5: Simplified Process Flow of Annual Reviews



Source: GAO based on DOD documentation.

³⁵In addition, each component PCA submits a list of system names to the IRBs on a semiannual basis, to include Tier 4 systems and systems in operations and maintenance that have been reviewed at the component level.

DOD Has Established the Structures Needed to Effectively Manage Business System Investments, but Has Not Fully Defined Many of the Related Policies and Procedures

According to our ITIM framework, organizations should establish the management structures needed to manage their investments and build an investment foundation by having defined policies and procedures for selecting and controlling individual projects (Stage 2 capabilities), and organizations also should manage projects as a portfolio of investments according to defined policies and procedures, treating them as an integrated package of competing investment options and pursuing those that best meet the strategic goals, objectives, and mission of the agency (Stage 3 capabilities). These Stages 2 and 3 capabilities assist agencies in complying with the investment management provisions of the Clinger-Cohen Act.

The department has defined four of nine practices that call for project-level policies and procedures (see table 4) and one of the five practices that call for portfolio-level policies and procedures (see table 6). Specifically, it has established the management structures contained in our ITIM framework, but it has not fully defined many of the related policies and procedures.

With respect to project-level investment management practices, DOD officials stated that these are performed at the component level, and that departmental policies and procedures established for overseeing components' execution of these practices are sufficient. With respect to portfolio-level practices, however, these officials stated that they intend to improve departmental policies and procedures for business system investments by, for example, establishing a single governance structure, but plans or time frames for doing so have not been established. According to our ITIM framework, adequately documenting both the policies and the associated procedures that govern how an organization manages its IT investment portfolio(s) is important because doing so provides the basis for having rigor, discipline, and repeatability in how investments are selected and controlled across the entire organization. Until DOD fully defines departmentwide policies and procedures for both individual projects and the portfolios of projects, it risks selecting and controlling these business system investments in an inconsistent, incomplete, and ad hoc manner, which in turn reduces the chances that these investments will meet mission needs in the most cost-effective manner.

DOD Has Begun to Build a Foundation for Project-Level Investment Management, but Key Policies and Procedures Are Not Fully Defined

At ITIM Stage 2, an organization has attained repeatable and successful IT project-level investment control and basic selection processes. Through these processes, the organization can identify project expectation gaps early and take the appropriate steps to address them. ITIM Stage 2 critical processes include (1) defining investment board operations, (2) identifying the business needs for each investment, (3) developing a basic process for selecting new proposals and reselecting ongoing investments, (4) developing project-level investment control processes, and (5) collecting information about existing investments to inform investment management decisions. Table 3 describes the purpose of each of these Stage 2 critical processes.

Table 3: Stage 2 Critical Processes—Building the Investment Foundation

Critical process	Purpose
Instituting the investment board	To define and establish an appropriate investment management structure and the processes for selecting, controlling, and evaluating investments.
Meeting business needs	To ensure that investments support the organization’s business needs and meet users’ needs.
Selecting an investment	To ensure that a well-defined and disciplined process is used to select new proposals and reselect ongoing investments.
Providing investment oversight	To review the progress of investments, using predefined criteria and checkpoints, in meeting cost, schedule, risk, and benefit expectations and to take corrective action when these expectations are not being met.
Capturing investment information	To make available to decision makers information to evaluate the impacts and opportunities created by proposed (or continuing) investments.

Source: GAO.

Within these five critical processes are nine key practices that call for policies and procedures associated with effective project-level management. DOD has fully defined the policies and procedures needed to ensure that four of these nine practices are performed in a consistent and repeatable manner. Specifically, DOD has established the management structures by instituting an enterprisewide investment board—the DBSMC—composed of senior executives, including the Deputy Secretary of Defense, with final approval authority over associated subsidiary investment boards. These lower-level investment boards include representatives from combatant commands, components, and the Joint Chiefs of Staff. In addition, DOD’s business transformation and IRB guidance define a process for ensuring that programs support the department’s ongoing and future business needs. DOD also has policies and procedures for submitting, updating, and maintaining investment information in DITPR and the IRB Portal. Furthermore, the department has assigned the component’s PCA the responsibility to ensure that

specific investment information contained in the portfolio repository and the IRB Portal is accurate and complete.

However, the policies and procedures associated with the remaining five project-level management practices are missing critical elements needed to effectively carry out essential investment management activities. For example:

- Policies and procedures for instituting the investment board do not address how investments that are past the development/modernization stage (i.e., in operations and maintenance) are to be governed. Given that DOD invests billions of dollars annually in operating and maintaining business systems, this is significant. While DOD officials stated that component-level policies and procedures address systems outside of development/modernization, our ITIM framework emphasizes that the corporate investment boards should continue to review important information about an investment, such as cost and performance baselines, throughout the investment's life cycle. In addition, the IRB Concept of Operations and other IRB documentation do not explicitly outline how the business investment management system is coordinated with JCIDS, PPBE, and DAS. Without clearly defined visibility into all investments with an understanding of decisions reached through other management systems, inconsistent decisions may result.
- Procedures do not specify how the full range of cost, schedule, and benefit data is used by the IRBs in making selection (i.e., certification) decisions. According to BTA officials, each IRB decides how to ensure compliance and determines additional factors to consider when making certification decisions. However, DOD did not provide us with any supplemental policies or procedures for any of the four IRBs. Without documenting how IRBs consider factors such as cost, schedule, and benefits when making selection decisions, the department cannot ensure that the IRBs and the DBSMC consistently and objectively select proposals that best meet the department's needs and priorities. Furthermore, while the procedures specify decision criteria that address statutory requirements for alignment to the BEA, the criteria allow programs to postpone demonstrating full compliance with several BEA artifacts until the final phases of the acquisition process. As a result, programs risk beginning production and deployment before ensuring that a business system is fully aligned to the BEA.
- Policies and procedures do not specify how reselection decisions at the corporate level (i.e., annual review decisions) consider investments that are in operations and maintenance. Without an understanding of how the

IRBs are to consider these investments when making reselection decisions, their ability to make informed and consistent reselection and termination decisions is limited.

- Policies and procedures do not specify how funding decisions are integrated with the process of selecting an investment at the corporate level. Without considering component and corporate budget constraints and opportunities, the IRBs risk making investment decisions that do not effectively consider the relative merits of various projects and systems when funding limitations exist.
- Policies and procedures do not exist that provide for sufficient oversight and visibility into component-level investment management activities, including component reviews of systems in operations and maintenance and Tier 4 investments. According to DOD officials, investment oversight is implemented through tiered accountability, which, among other things, allocates responsibility and accountability for business system investments with total costs of \$1 million or less and those in operations and maintenance to the components. However, the department did not provide policies and procedures defining how the DBSMC and the IRBs ensure visibility into these component processes. This is particularly important because, according to DOD's March 15, 2007, annual report to Congress, only 285 of approximately 3,100 total business systems have completed the IRB certification process and have been approved by the DBSMC. DOD officials also stated that the remaining business systems have not been through the certification process and have not been given a tier designation. Without policies and procedures defining how the DBSMC and the IRBs have visibility into and oversight of all business system investments, DOD risks components continuing to invest in systems that are duplicative, stovepiped, nonintegrated, and unnecessarily costly to manage, maintain, and operate.

Table 4 summarizes our findings relative to DOD's execution of the nine practices that call for the policies and procedures needed to manage IT investments at the project level.

Table 4: Summary of Policies and Procedures for Stage 2 Critical Processes—Building the Investment Foundation

Critical process	Key practice	Rating	Summary of evidence
Instituting the investment board	1. An enterprisewide IT investment board composed of senior executives from IT and business units is responsible for defining and implementing the organization's IT investment governance process.	Executed	DOD has instituted an enterprisewide business system investment board—the DBSMC—composed of senior executives, including the Deputy Secretary of Defense and the ASD(NII)/CIO. This board is responsible for establishing and implementing policies governing the organization's investment process and approving lower-level investment board processes and procedures.
	2. The organization has a documented IT investment process directing each investment board's operations.	Not executed	DOD's IRB Concept of Operations directs its IRBs and includes the roles and responsibilities of the boards and individuals involved. However, the concept of operations does not assign the boards accountability for programs throughout the investment life cycle (i.e., investments that are past the development/modernization stage and in operations and maintenance). In addition, according to our ITIM guidance, the department's investment process should specify the manner in which investment-related processes will be coordinated with other organizational plans, processes, and documents. However, DOD's concept of operations does not specify how the business investment management system is coordinated with JCIDS, PPBE, and DAS.
Meeting business needs	1. The organization has documented policies and procedures for identifying IT projects or systems that support the organization's ongoing and future business needs.	Executed	DOD's Business Transformation Guidance and the Investment Certification and Annual Review Process User Guidance define a process for ensuring that IT business system investments support the department's ongoing and future business needs.

Critical process	Key practice	Rating	Summary of evidence
Selecting an investment	1. The organization has documented policies and procedures for selecting a new investment.	Not executed	DOD has a two-stage selection process. The first stage involves selection of systems using the JCIDS, DAS, and PPBE management systems. At this level, proposals and alternatives are viewed and prioritized for system selection. The second stage of selection involves (1) certifying and approving Tiers 1 through 3 investments and (2) elevating certain component investments to an enterprisewide status using the business investment management system. While DOD's IRB Concept of Operations and its Investment Certification and Annual Review Process User Guidance define the department's corporate approach for certifying and approving investments, they do not contain a structured method defining how certification decisions are reached. For example, the guidance does not specify how cost, schedule, and benefit data are to be used in making certification decisions. According to our ITIM guidance, a structured selection method should provide investment boards, business units, and IT developers with a common understanding of the selection process, including the cost, schedule, and benefit data used to compare and select projects. In addition, neither the IRB Concept of Operations nor the Investment Certification and Annual Review Process User Guidance define the selection criteria used to elevate these investments to an enterprisewide status. Furthermore, the BEA Compliance Guidance allows programs to postpone demonstrating full compliance with several BEA artifacts until the final phases of the acquisition process. In addition, criteria for certifying compliance with the BEA are inconsistently described in DOD documentation. For example, the BEA Compliance Guidance provides different checkpoints for assessing compliance during the life cycle of a program than the Business Transformation Guidance.
	2. The organization has documented policies and procedures for reselecting ongoing investments.	Not executed	DOD's IRB Concept of Operations and the Investment Certification and Annual Review Process User Guidance define the department's corporate approach for annually reviewing investments. However, these documents do not include specific criteria that describe how the IRBs make reselection decisions. For example, while DOD officials stated that a program's risk areas (i.e., cost, schedule, and performance) are identified and discussed by the IRB during the annual reviews, the guidance does not specify how this information is used in making annual review decisions. In addition, the guidance does not provide for the reselection of investments that are in operations and maintenance. Our ITIM guidance states that consistent qualitative and quantitative measures are needed for analyzing a project for reselection or, if necessary, termination. According to ITIM, the results of this analysis can help the investment board determine the potential risk and return of continuing to fund an ongoing project and to prioritize projects on the basis of decision criteria.
	3. The organization has documented policies and procedures for integrating investment funding with investment selection.	Not executed	According to DOD officials and the Investment Certification and Annual Review Process User Guidance, the IRBs are aware of the amount of funding components have requested for a program. However, this guidance does not specify how funding decisions are integrated with the process of selecting an investment, and does not specify how the DBSMC and the IRBs use this information in carrying out decisions on system certification and approvals.

Critical process	Key practice	Rating	Summary of evidence
Providing investment oversight	1. The organization has documented policies and procedures for management oversight of IT projects and systems.	Not executed	DOD's IRB Concept of Operations and the Investment Certification and Annual Review Process User Guidance do not provide sufficient oversight and visibility into component-level investment management activities, including component reviews of systems in operations and maintenance and Tier 4 investments. For example, while the components submit a list of systems reviewed at their levels, the list lacks important project information, including adherence to cost, schedule, and risk criteria. According to ITIM, to maintain adequate oversight, the investment board should have visibility into each project's performance and progress toward predefined cost and schedule expectations as well as each project's anticipated benefits and risk exposure. In addition, IRB policies and procedures do not define how the department's management systems, JCIDS, PPBE, and DAS, are related.
Capturing investment information	1. The organization has documented policies and procedures for identifying and collecting information about IT projects and systems to support the investment management process.	Executed	DOD's Investment Certification and Annual Review Process User Guidance describes the procedures for submitting, updating, and maintaining information in DITPR and the IRB Portal, both of which support the business investment management system.
	2. An official is assigned responsibility for ensuring that the information collected during project and systems identification meets the needs of the investment management process.	Executed	DOD's Investment Certification and Annual Review Process User Guidance assigns the component PCA the responsibility to ensure investment information contained in DITPR and the IRB Portal is accurate and complete. The guidance also assigns IRB staff responsibility for verifying these data.

Source: GAO.

According to BTA officials, the IRB Concept of Operations and the Investment Certification and Annual Review Process User Guidance are not intended to describe the detailed approach that each IRB will use when making certification decisions, adding that the components are responsible for selection, annual review, budgeting, and acquisition. While the ITIM framework does allow for multiple entities to carry out investment selection, control, and evaluation, building a sound investment foundation requires that the enterprisewide investment review board has documented criteria and decision-making procedures, clear integration among investment decision-support systems, and policies to ensure board access to system information throughout the life cycle for all investments. Until DOD's documented IT investment management policies and procedures include fully defined policies and procedures for Stage 2 activities, specify the linkages between the various related processes, and describe how investments are to be governed in the operations and maintenance phase, DOD risks that investment management activities will not be carried out consistently and in a disciplined manner. Moreover,

DOD also risks selecting investments that will not cost-effectively meet its mission needs.

DOD Has Assigned Responsibility, but Has Not Defined the Policies and Procedures Associated with Effective Portfolio-Level Management

At Stage 3, an organization has defined critical processes for managing its investments as a portfolio or set of portfolios.³⁶ Portfolio management is a conscious, continuous, and proactive approach to allocating limited resources among competing initiatives in light of the investments’ relative benefits. Taking an agencywide perspective enables an organization to consider its investments comprehensively, so that collectively the investments optimally address the organization’s missions, strategic goals, and objectives. Managing IT investments as portfolios also allows an organization to determine its priorities and make decisions about which projects to fund on the basis of analyses of the relative organizational value and risks of all projects, including projects that are proposed, under development, and in operation. Although investments may initially be organized into subordinate portfolios—on the basis of, for example, business lines or life-cycle stages—and managed by subordinate investment boards, they should ultimately be aggregated into enterprise-level portfolios.

According to ITIM, Stage 3 involves (1) defining the portfolio criteria; (2) creating the portfolio; (3) evaluating (i.e., overseeing) the portfolio; and (4) conducting postimplementation reviews. Table 5 summarizes the purpose of each of these activities.

Table 5: Stage 3 Critical Processes—Developing a Complete Investment Portfolio	
Critical process	Purpose
Defining the portfolio criteria	To ensure that the organization develops and maintains portfolio selection criteria that support its mission, organizational strategies, and business priorities.
Creating the portfolio	To ensure that investments are analyzed according to the organization’s portfolio selection criteria, and to ensure that an optimal investment portfolio with manageable risks and returns is selected and funded.
Evaluating the portfolio	To review the performance of the organization’s investment portfolio(s) at agreed-upon intervals, and to adjust the allocation of resources among investments as necessary.
Conducting postimplementation reviews	To compare the results of recently implemented investments with the expectations that were set for them, and to develop a set of lessons learned from these reviews.

Source: GAO.

³⁶Investment portfolios are integrated agencywide collections of investments that are assessed and managed collectively on the basis of common criteria.

DOD is executing one of the five practices within these four critical processes that call for policies and procedures associated with effective portfolio-level management. Specifically, DOD has issued departmentwide guidance³⁷ that assigns responsibilities to the USD(AT&L) for managing and establishing business system investment portfolios, including leveraging or establishing a governance forum to oversee these business system investment portfolio activities.

However, DOD has not fully defined the policies and procedures needed to effectively execute the remaining four portfolio management practices relative to business system investments. Specifically, DOD does not have policies and procedures for defining the portfolio criteria or for creating and evaluating the portfolio. In addition, while DOD has policies and procedures for conducting postimplementation reviews as part of DAS, these reviews do not address systems at all tier levels. Furthermore, there are no procedures detailing how lessons learned from these reviews are used during investment review as the basis for management and process improvements.

Table 6 summarizes the rating for each critical process required to manage investment as a portfolio and summarizes the evidence that supports these ratings.

³⁷DOD Directive 8115.01, *Information Technology Portfolio Management*, and DOD Instruction 8115.02, *Information Technology Portfolio Management Implementation*.

Table 6: Summary of Policies and Procedures for Stage 3 Critical Processes—Developing a Complete Investment Portfolio

Critical process	Key practice	Rating	Summary of evidence
Defining the portfolio criteria	1. The organization has documented policies and procedures for creating and modifying IT portfolio selection criteria.	Not executed	DOD's IT Portfolio Management Implementation states that the USD(AT&L) is responsible for creating and modifying portfolio criteria (e.g., prioritization and investment tradeoffs) for business system investments. However, the USD(AT&L) has not documented the related policies and procedures.
	2. Responsibility is assigned to an individual or group for managing the development and modification of the IT portfolio selection criteria.	Executed	DOD's IT Portfolio Management assigns responsibility for the business mission area portfolio management to the USD(AT&L), who leads and manages business system investments in coordination with the ASD(NII)/CIO, the Under Secretary of Defense (Comptroller), and the Under Secretary of Defense (Personnel and Readiness).
Creating the portfolio	1. The organization has documented policies and procedures for analyzing, selecting, and maintaining the investment portfolios.	Not executed	DOD does not have policies and procedures for analyzing, selecting, and maintaining business system investment portfolios.
Evaluating the portfolio	1. The organization has documented policies and procedures for reviewing, evaluating, and improving the performance of its portfolio(s).	Not executed	While the IRB Concept of Operations states that the IRBs are responsible for reviewing factors associated with portfolio management, such as architecture alignment and capability delivery, there are no policies and procedures indicating how the IRBs should use these factors and project indicators—such as cost, schedule, and risk—to review, evaluate, and improve their portfolios. According to our ITIM guidance for Stage 3, IRBs should use actual investment data, such as project cost and adherence to schedule, as the basis for reviewing and evaluating its portfolio(s) to ensure that the overall portfolio provides the maximum benefits at a desired cost and at an acceptable level of risk.
Conducting postimplementation reviews	1. The organization has documented policies and procedures for conducting postimplementation reviews.	Not executed	While DOD requires postimplementation reviews for Tier 1 systems as part of DAS, there are no policies or procedures for conducting them for Tiers 2 or 3 systems. Moreover, there are no policies or procedures directing the DBSMC or IRBs, or both, which are accountable for corporate business system investments, to consider information gathered and to develop lessons learned from these postimplementation reviews. According to ITIM, an effective postimplementation review includes, among other things, how conclusions, lessons learned, and recommended management action steps are to be disseminated to executives and others.

Source: GAO.

According to BTA officials, while portfolio management is primarily a component responsibility, they are working toward developing more effective departmentwide portfolio management processes, but plans or

time frames for doing so have not been established. Without defining corporate policies and procedures for managing business system investment portfolios, DOD is at risk of not consistently selecting the mix of investments that best supports the departmentwide mission needs and ensuring that investment-related lessons learned are shared and applied departmentwide.

Conclusions

Given the importance of business systems modernization to DOD's mission, performance, and outcomes, it is vital for the department to adopt and employ an effective institutional approach to managing business system investments. While the department has established aspects of such an approach and, thus, has a foundation on which to build, it is lacking other important elements, such as specific policies and procedures needed for project-level and portfolio-level investment management, including integration with DOD's other key management systems and sufficient oversight and visibility into operations and maintenance investments and Tier 4 investments. This means that DOD lacks an institutional capability to ensure that it is investing in business systems that best support its strategic needs, and that ongoing projects meet cost, schedule, and performance expectations. Until DOD develops this capability, the department will be impaired in its ability to optimize business mission area performance and accountability.

Recommendations for Executive Action

To strengthen DOD's business system investment management capability and address the weaknesses discussed in this report, we recommend that the Secretary of Defense direct the Deputy Secretary of Defense, as the chair of the DBSMC, to ensure that well-defined and disciplined business system investment management policies and procedures are developed and issued. At a minimum, this should include project-level management policies and procedures that address the following five areas:

- instituting the investment boards, including assigning the investment boards responsibility, authority, and accountability for programs throughout the investment life cycle and specifying how the business investment management system is coordinated with JCIDS, PPBE, and DAS;

-
- selecting new investments, including specifying how cost, schedule, and benefit data are to be used in making certification decisions; defining the criteria used to select investments as enterprisewide; and establishing consistent and effective guidance for BEA compliance;
 - reselecting ongoing investments, including specifying how cost, schedule, and performance data are to be used in the annual review process and providing for the reselection of investments that are in operations and maintenance;
 - integrating funding with the process of selecting an investment, including specifying how the DBSMC and the IRBs use funding information in carrying out decisions on system certification and approvals; and
 - overseeing IT projects and systems, including providing sufficient oversight and visibility into component-level investment management activities.

These well-defined and disciplined business system investment management policies and procedures should also include portfolio-level management policies and procedures that address the following four areas:

- creating and modifying IT portfolio selection criteria for business system investments;
- analyzing, selecting, and maintaining business system investment portfolios;
- reviewing, evaluating, and improving the performance of its portfolio(s) by using project indicators, such as cost, schedule, and risk; and
- conducting postimplementation reviews for all investment tiers and directing the investment boards, which are accountable for corporate business system investments, to consider the information gathered and to develop lessons learned from these reviews.

Agency Comments and Our Evaluation

In written comments on a draft of this report, signed by the Deputy Under Secretary of Defense (Business Transformation) and reprinted in appendix II, the department stated that it agreed with the report's overall conclusions, and it described efforts under way and planned that it said would address many of the gaps identified in the report. In this regard, the department partially concurred with five of the report's recommendations,

adding that our recommendations and feedback are helpful in guiding DOD's business transformation and related improvement efforts. Nevertheless, the department disagreed with the remaining four recommendations on the grounds that their intent had already been met through DOD's existing business system investment management structure and processes, or that they contradicted the tiered accountability concept embedded in this structure and processes. The department's comments relative to each of our project-level and portfolio-level recommendations, along with our responses to its comments, are provided below.

With respect to our five project-level recommendations, the department stated that it partially agreed with two and disagreed with three.

- DOD partially agreed with our recommendation to define and implement policies and procedures that assign the investment boards responsibility for programs throughout the investment life cycle and specify how the business investment management system is coordinated with JCIDS, PPBE, and DAS. In particular, it stated that under its tiered accountability approach to business systems investment management, the components are currently required to review all programs throughout their investment life cycles. We do not question this requirement, and we recognize it in our report. However, consistent with our ITIM framework, the corporate investment boards should continue to review investments that meet the defined threshold criteria throughout their life cycles (i.e., when they are in operations and maintenance). In contrast, DOD's corporate boards focus only on those investments that are in the development/modernization stage. The department also stated that a linkage is currently depicted in existing guidance among its investment selection, acquisition, and funding processes. While we do not question that this guidance contains an illustration depicting such a link, neither this guidance nor supporting procedures define how this linkage is executed (e.g., how investment funding decisions are in fact integrated with investment selection decisions). DOD's comments appear to acknowledge this point by stating that the department has begun to define and implement a Business Capability Lifecycle concept, which is intended to integrate the investment selection and acquisition management processes for Tier 1 and enterprise systems into a single oversight process that leverages the existing IRB and DBSMC oversight framework.
- DOD partially agreed with our recommendation to define and implement policies and procedures that specify how cost, schedule, and benefit data are to be used in making certification and annual review decisions; define the criteria used to select investments as enterprisewide; and establish

consistent and effective guidance for BEA compliance. In particular, the department agreed that additional criteria are required for selecting enterprisewide investments, noting that initial criteria have been defined and will be incorporated in the investment management process. However, the department did not agree that cost, schedule, and BEA compliance information are not sufficiently used for certification and annual review decisions, adding that such information is required in its current policies. We do not agree. Specifically, while we do not question whether investment data are provided to the DBSMC and the IRBs, the department's policies and procedures do not include specific decision criteria that explain how these data are to be used to make consistent, repeatable selection and reselection decisions across all investments. In addition, while BEA compliance policies have been developed and are being used, the guidance is not fully defined. For example, the guidance allows programs to defer demonstrating full compliance with important BEA artifacts until the final phases of the acquisition process, at which time addressing instances of noncompliance would be more expensive and difficult. Furthermore, the compliance criteria are not consistently described in different guidance documentation. As a result, DOD risks beginning system production and deployment before ensuring that a system is sufficiently aligned to the BEA.

- DOD did not agree with our recommendation to define and implement policies and procedures that provide for the reselection of investments that are in operations and maintenance. According to DOD, components are required by policy to annually review all business systems, including investments for which there is no planned development or modernization spending. We agree that the annual review process does require this. However, consistent with our ITIM framework, the corporate investment boards should continue to reselect investments that meet the defined threshold criteria throughout their life cycles (i.e., when they are in operations and maintenance). In contrast, DOD's corporate boards focus only on reselecting those investments that are in the development/modernization stage.
- DOD did not agree with our recommendation to define and implement policies and procedures that specify how the corporate boards use funding information in carrying out decisions on system certification and approvals. In this regard, it stated that such information is required in its current policies and considered during board deliberations. We do not agree. Our recommendation does not address whether existing policies or guidance provide for the collection of this information; our recommendation addresses the definition of policy, guidance, and supporting procedures that fall short of satisfying the best practices

embodied in our ITIM framework. Specifically, while we do not question whether funding data are provided to investment decision-making bodies, the department's policies and procedures do not include specific decision criteria that explain how these data are to be used to make consistent, repeatable selection and reselection decisions across all investments.

- DOD did not agree with our recommendation to define and implement policies and procedures that provide for sufficient oversight and visibility into component-level investment management activities. In particular, it stated that this recommendation contradicts the department's "tiered accountability" approach to investment management. We do not agree. Under the department's current policies and guidance, most DOD investments are not subject to corporate visibility and oversight, either because they do not involve development/modernization (i.e., they are in operations and maintenance) or because they do not exceed a certain dollar threshold. Our framework recognizes that effective implementation of a tiered accountability concept should include appropriate corporate visibility into and oversight of investments, either through review and approval of those investments that meet certain criteria or through awareness of a subordinate board's investment management activities. Moreover, this visibility and oversight should extend to the entire portfolio of investments, including those that are in operations and maintenance. To ensure that this occurs, applicable policies and procedures need to explicitly cover all such investments and need to define how this is to be accomplished.

With respect to our four portfolio-level recommendations, the department stated that it partially agreed with three and disagreed with one.

- DOD partially agreed with our recommendation to define and implement policies and procedures for creating and modifying portfolio selection criteria for business system investments. In particular, it stated that while components are responsible for developing and managing their own portfolio management processes, upcoming initiatives, such as the Business Capability Lifecycle concept, will lead to revisions in the department's investment review policies and procedures, such as including portfolio selection criteria for enterprise systems that span components. However, while these are important steps, the concept, as defined by the department, does not apply to the thousands of investments that are not enterprisewide.
- DOD partially agreed with our recommendation to define and implement policies and procedures that address analyzing, selecting, and maintaining business system investment portfolios. In particular, it stated that the

implementation of the Business Capability Lifecycle concept will provide the corporate boards with improved visibility into all investments in a given portfolio and a broader set of criteria for analyzing, selecting, and maintaining business system investment portfolios.

- DOD partially agreed with our recommendation to define and implement policies and procedures that address reviewing, evaluating, and improving the performance of its portfolio(s) by using cost, schedule, and risk indicators. In particular, it stated that while such indicators are part of the investment certification and review processes, efforts are now under way to better understand the nature and impact of program risks through application of an Enterprise Risk Assessment Methodology. While we recognize the role and value of such tools in understanding and addressing program risks, this tool is program-specific and not portfolio-focused.
- DOD did not agree with our recommendation to define and implement policies and procedures that address conducting postimplementation reviews and having the corporate investment boards consider the review results and develop lessons learned from them. In particular, it stated that this process should not be managed by the Deputy Secretary of Defense, and also stated that our recommendation is redundant with postimplementation reviews currently required under OMB Circular A-130.³⁸ We do not agree with DOD's statements. Our recommendation does not call for the Deputy Secretary to manage the postimplementation review process. Rather, it provides for developing policies and procedures for performing postimplementation reviews for all tiers of business systems and having the DBSMC and IRBs, which are the corporate investment boards, consider the information gathered from these reviews and develop lessons learned.

We are sending copies of this report to interested congressional committees; the Director, Office of Management and Budget; the Secretary of Defense; the Deputy Secretary of Defense; the Under Secretary of Defense for Acquisition, Technology, and Logistics; the Under Secretary of Defense (Comptroller); the Assistant Secretary of Defense (Networks and Information Integration)/Chief Information Officer; the Under Secretary of

³⁸According to OMB Circular A-130, which establishes policy for the management of federal information resources, as part of the capital planning process, an agency must, among other things, conduct postimplementation reviews of information systems and information resource management processes to validate estimated benefits and costs; document effective management practices for broader use; and document lessons learned from the postimplementation reviews.

Defense (Personnel and Readiness); and the Director, Defense Finance and Accounting Service. Copies of this report will be made available to other interested parties upon request. This report will also be available at no charge on our Web site at <http://www.gao.gov>.

If you or your staffs have any questions on matters discussed in this report, please contact me at (202) 512-3439 or hiter@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made major contributions to this report are listed in appendix III.

A handwritten signature in black ink, reading "Randolph C. Hite". The signature is fluid and cursive, with the first name "Randolph" being the most prominent part.

Randolph C. Hite
Director, Information Technology Architecture
and Systems Issues

List of Committees

The Honorable Carl Levin
Chairman
The Honorable John McCain
Ranking Member
Committee on Armed Services
United States Senate

The Honorable Daniel Inouye
Chairman
The Honorable Ted Stevens
Ranking Member
Committee on Appropriations
United States Senate

The Honorable Ike Skelton
Chairman
The Honorable Duncan Hunter
Ranking Member
Committee on Armed Services
House of Representatives

The Honorable John P. Murtha
Chairman
The Honorable C.W. Bill Young
Ranking Member
Committee on Appropriations
House of Representatives

Appendix I: Objective, Scope, and Methodology

Our objective was to determine whether the Department of Defense's (DOD) corporate investment management approach comports with relevant federal guidance. Our analysis was based on the best practices contained in GAO's Information Technology Investment Management (ITIM) framework, and the framework's associated evaluation methodology, and focused on DOD's establishment of departmental-level policies and procedures for business system investments needed to assist organizations in complying with the investment management provisions of the Clinger-Cohen Act of 1996 (Stages 2 and 3). It did not include case studies to verify the implementation of established policies and procedures.

To address our objective, we asked DOD to complete a self-assessment of its corporate investment management process and provide the supporting documentation. We then reviewed the results of the department's self-assessment of Stages 2 and 3 organizational commitment practices—meaning those practices related to structures, policies, and procedures—and compared them against our ITIM framework. We also validated and updated the results of the self-assessment through document reviews and interviews with officials, such as the Director of Investment Management and the Defense Business Systems Acquisition Executive. In doing so, we reviewed written policies, procedures, and guidance and other documentation providing evidence of executed practices, including the Defense Acquisition System guidance, the Investment Review Board (IRB) Concept of Operations and Guidance, the Business Enterprise Architecture Compliance Guidance, IRB charters and meeting minutes, and the Business Transformation Guidance.

We compared the evidence collected from our document reviews and interviews with the key practices in ITIM. We rated the key practices as “executed” on the basis of whether the agency demonstrated (by providing evidence of performance) that it had met all of the criteria of the key practice. A key practice was rated as “not executed” when we found insufficient evidence of all elements of a practice being fully performed or when we determined that there were significant weaknesses in DOD's execution of the key practice. In addition, we provided DOD with the opportunity to produce evidence for the key practices rated as “not executed.”

We conducted our work at DOD headquarters offices in Arlington, Virginia, from August 2006 through April 2007 in accordance with generally accepted government auditing standards.

Appendix II: Comments from the Department of Defense



ACQUISITION,
TECHNOLOGY
AND LOGISTICS

OFFICE OF THE UNDER SECRETARY OF DEFENSE

3000 DEFENSE PENTAGON
WASHINGTON, DC 20301-3000

MAY 3 2007

Mr. Randolph Hite
Director, Information Technology Architecture and Systems Issues
U.S. Government Accountability Office
441 G Street, N.W.
Washington, DC 20548

Dear Mr. Hite:

This is the Department of Defense (DoD) response to the GAO draft report 07-538, "BUSINESS SYSTEMS MODERNIZATION: DoD Needs to Fully Define Policies and Procedures for Institutionally Managing Investments," dated March 30, 2007, (GAO Code 310636).

The Department welcomes GAO's insight and suggestions as we continue to strive toward meeting our shared goals of transforming defense business practices. GAO provides valuable feedback on the Department's achievements, highlights areas where we can improve, and helps keep our effort on track toward achieving quality outcomes.

Attached are the Department's responses to the GAO's recommendations to draft report GAO-07-538. The Department partially concurs on five and non-concurs with four of the recommendations because we believe that the existing structure established by the Department already meets the overall intent of several of GAO's recommendations.

However, we agree with GAO's overall conclusions that DoD should continue to improve upon its existing investment management policies and procedures for individual business systems and programs. In fact, the Department is now developing and implementing changes in its investment management practices that address many of the gaps identified by GAO in this audit report. These efforts, in the totality, address many of the issues and illustrate preplanned BTA efforts to ameliorate the concerns. Recent enterprise-level improvements include:

- Risk mitigation. Five of the ten business enterprise-level business programs defined as Major Automated Information Systems (MAIS) have been or are scheduled soon for an Enterprise Risk Assessment Methodology (ERAM) evaluation of execution risk and alignment with enterprise capability goals. The remainder of these 10 business MAIS will be brought under ERAM by the end of FY 2007.
- Enterprise standards. The BTA is currently "rationalizing the enterprise" and identifying systems as "enterprise" or "non-enterprise". Following the initial



declaration, the programs assigned to the “enterprise” will be under the direction of Defense Business Systems Acquisition Executive (DBSAE) and “non-enterprise” programs will be further assigned to the appropriate component, thus examining and assigning the programs to comport with the DoD tiered accountability structure. While this effort is in its infancy, it provides increased insight into programs, and the appropriate level of portfolio management.

- Management framework. We are developing specific policy guidance to amend the non-statutory portions of the DoD 5000 series of acquisition regulations and the JCS 3170 to adopt a management structure tailored to the business mission area. This framework, called the Business Capability Lifecycle (BCL), is beginning implementation. BCL is being designed to directly address acknowledged shortfalls in how DoD develops and fields MAIS and enterprise-level business systems. We expect to fully implement BCL early in FY 2008.

At the component level, the tiered accountability concept remains the foundation for implementing portfolio management for the business mission area. Although we agree that at an enterprise level we need to establish the appropriate guidance and infrastructure for business transformation, we strongly believe that delegating certain investment management responsibilities to the component organizations provides for a more efficient investment management process. Tiered accountability has been embraced across DoD. This includes improving DoD’s ability at an enterprise level to maintain the appropriate level of visibility into the component’s operations.

GAO continues to be a valuable and constructive partner in the Department’s business transformation efforts. The recommendations and feedback provided will help to further guide DoD’s process of continual improvement. We welcome GAO’s insights and look forward to your participation in our future efforts.

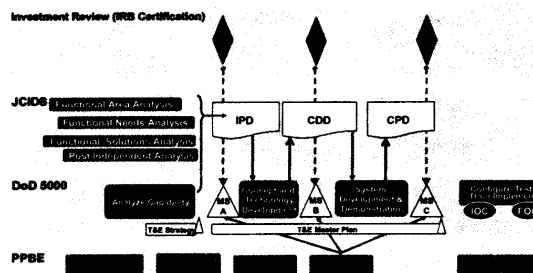


Paul A. Brinkley
Deputy Under Secretary of Defense
(Business Transformation)

GAO DRAFT REPORT DATED MARCH 30, 2007
GAO-07-538 (GAO CODE 310636)

RECOMMENDATION 1: The GAO recommends that the Secretary of Defense direct the Deputy Secretary of Defense, to institute the investment boards, including assigning the investment boards responsibility, authority, and accountability for programs throughout the investment life cycle and specifying how the business investment management system is coordinated with Joint Capabilities Integration and Development System (JCIDS), Planning, Programming, Budgeting, and Execution (PPBE) and Defense Acquisition System (DAS) to ensure that well-defined and disciplined business system investment management policies and procedures are developed and issued. (p. 34/GAO Draft Report)

DOD RESPONSE: Partially-Concur – The Department believes that the IRB/DBSMC process and tiered accountability with the Components currently supports accountability for programs throughout the investment lifecycle. Further, the Department believes a linkage currently exists between the IRB certification and review processes and many other DOD decision support processes including JCIDS, PPBE, and Acquisition, as depicted in the figure below from the 13 December 2006 Business Transformation Guidance.



This linkage is also addressed in the IRB Concept of Operations (CONOPS) (previously provided to GAO), dated 29 August 2006, in section 7.2, page 9. To further the alignment between the three processes, the DoD has begun to implement the Business Capability Lifecycle (BCL) concept which is scheduled to be fully implemented by FY08 and included in the DoD 5000 and JCS 3170 rewrites scheduled for the fall of FY08. The BCL will integrate the JCIDS and DAS, for Tier 1 and Enterprise systems, into a single oversight process leveraging the existing IRBs and DBSMC oversight framework. As stated in the March 2007 Annual Report to the Congressional Defense Committees, the BCL has three phases:

- Definition - The BCL approach requires the PSA and the functional sponsor to collaborate to identify and clearly describe the root cause of a business problem, long before a vendor is involved in the process. The PSA and functional sponsor are asked to clearly explain why solving the problem will benefit the Department and (importantly) validate there is no existing solution. This problem statement and supporting justification become the basis of the business case for the proposed capability, which will be reviewed and approved by the appropriate IRB. It is during this phase of the BCL that the Defense Acquisition Executive decides whether a new program start will be approved for funding, based on the recommendations of the IRB and members of the DBSMC.
- Investment - After the decision is made to fund a program start, the business case for the capability is expanded by the functional sponsor and the candidate program office to identify the scope of the materiel capabilities needed to solve the problem. The business case will also define the desired outcomes for the capability, including objectives and metrics, solution constraints and dependencies. A detailed analysis of alternatives is conducted during this phase and included in the business case document, which is augmented by a proposed acquisition approach and contracting strategy.
- Execution - During the execution phase, responsibility for developing and fielding the capability is formally assumed by the program manager. However, the BCL concept requires that the functional sponsor remain heavily engaged with the program office to address any issues, requests or changes to the scope. In particular, the BCL requires that the functional sponsor re-validate the business case (including problem definition, expected outcomes, metrics, and costs) before each acquisition milestone or investment decision point, such as an initial test or the completion of the definition of a program baseline.

We are developing specific policy guidance to amend the non-statutory portions of the DoD 5000 series of acquisition regulations and the JCS 3170 to incorporate BCL.

Under Tiered Accountability and as system owners, Components are responsible for:

- Overseeing program progress through the JCIDS and DAS
- Advocating for program resources in the PPBE process.
- Coordinating with the IRBs when system certification for development/modernization is required at key milestones in the Acquisition process.
- Managing systems that are past the development/modernization stage through the PPBE process and the annual review process as documented in the IRB Guidance.

The IRB CONOPS and the IRB User Guidance state that Components are required to annually review all business systems, including those that are in

sustainment, suggesting that they perform this review as part of an existing process such as the annual Program / Budget Formulation phase of PPBE. The IRBs review, at least annually, all business system investments that have been previously been certified for development and modernization efforts over \$1 million dollars as required by the FY2005 NDAA. The result is that all business systems, whether they are under development/modernization or have been placed in sustainment, are reviewed annually throughout their lifecycles.

RECOMMENDATION 2: The GAO recommends that the Secretary of Defense direct the Deputy Secretary of Defense, to select new investments, including specifying how cost, schedule, and benefit data are to be used in making certification decisions; defining the criteria used to select investments as enterprise-wide; and establishing consistent and effective guidance for business enterprise architecture (BEA) to ensure that well-defined and disciplined business system investment management policies and procedures are developed and issued. (p. 35/GAO Draft Report)

DOD RESPONSE: Partially Concur

Partially Concur

The BTA has defined initial criteria for selecting enterprise-wide investments and is in the process of applying this criterion to the enterprise systems under the Defense Business Systems Acquisition Executive (DBSAE). This effort is defining a framework that articulates the set of specific characteristics that are appropriate for an enterprise-level solution.

This initiative which is referred to as “Rationalizing the Enterprise” is scheduled to be finalized this summer and will be incorporated into the investment management process to help the IRBs and Components determine which business capabilities should be implemented at the Business Mission Area (BMA) enterprise level versus those that should be implemented at the Component level.

Non-concur

IRB/DBSMC Policies do require cost, schedule and benefit data for certification decisions and annual review IRB assessments. This information is included on both the annual review and certification dashboards. Cost, schedule and performance is assessed as “green”, “yellow” or “red” based on specified thresholds defined in policy and benefit is assessed through non-financial and financial metrics substantiated with an economic viability analysis. IRB decisions are not based on any one item but a combination of factors, some of which are measurable, and some less tangible. Cost, schedule, and performance are the basis upon which annual reviews are conducted.

Non-Concur

BEA Compliance policies were released April 10, 2006, which describe the process for assessing compliance to the architecture and define the requirements for an architecture compliance plan. This guidance has also been enabled through the *Architecture Compliance and Requirements Traceability* Tool which creates a semi-automated process for assessing compliance and generating a Compliance

Plan. It also provides metrics which show the degree of alignment to the BEA and number of “compliant”, “non-compliant” and “compliance pending” instances.

RECOMMENDATION 3: The GAO recommends that the Secretary of Defense direct the Deputy Secretary of Defense, to reselect ongoing investments, including specifying how cost, schedule, and performance data are to be used in the annual review process and providing for the reselection of investments that are in operations and maintenance to ensure that well-defined and disciplined business system investment management policies and procedures are developed and issued. (p. 35/GAO Draft Report)

DOD RESPONSE: Non-Concur

As stated above, cost, schedule and performance data are used in the annual review process.

Per the IRB CONOPS, dated 29 August 2006, in section 8.0, page 13:

- Components are required to annually review all business systems, regardless of investment Tier, including systems for which there is no planned development or modernization spending.
- At a minimum, as part of the annual reviews Components should make sure that systems are assessed against the DoD BEA, ensure systems are included in the Component or Enterprise Transition Plan, and that all required information regarding each system has been updated in the Department’s global business systems inventory.
- Components are required to submit a letter to the IRBs on a semi-annual basis, on a schedule consistent with the Enterprise Transition Plan update cycle, listing all business systems that have been reviewed. These internal Component reviews, coupled with notification of these reviews to the CA / IRB, meet the FY 2005 NDAA annual review requirement.

RECOMMENDATION 4: The GAO recommends that the Secretary of Defense direct the Deputy Secretary of Defense, to integrate funding with the process of selecting an investment, including specifying how the Defense Business Systems Management Committee (DBSMC) and the Investment Review Board (IRB) use funding information in carrying out decisions on system certification and approvals to ensure that well-defined and disciplined business system investment management policies and procedures are developed and issued. (p. 35/GAO Draft Report)

DOD RESPONSE: Non-Concur

Funding information is integrated into the current IRB/DBSMC process; funding information for every investment is presented to the IRB membership and documented on both the certification and annual review dashboards and PCA letters. Funding is an important element of the process and is taken into consideration along with other information (e.g. risk, benefit) during IRB/DBSMC deliberations. When there are funding issues associated with a particular investment, they are addressed during the IRB process, particularly during the annual review process. If they are related to poor management/execution, the IRB/DBSMC may recommend reprogramming actions to support better alignment of budget to the needs of the portfolio. Each IRB decision is based on a review of available information and unfunded requests are handled on a case by case basis.

RECOMMENDATION 5: The GAO recommends that the Secretary of Defense direct the Deputy Secretary of Defense, to oversee information technology (IT) projects and systems, including providing sufficient oversight and visibility into component-level investment management activities to ensure that well-defined and disciplined business system investment management policies and procedures are developed and issued. (p. 35/GAO Draft Report)

DOD RESPONSE: Non-Concur – The Department’s investment management process for business systems is predicated on the tiered accountability approach, under which DoD Components are responsible for managing their IT investments and IT portfolios with the proviso that the cognizant IRBs and the DBSMC provide oversight over those investments to ensure compliance with 10 U.S.C. 2222, as added by Section 332 of the Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005, and other applicable laws, regulations, and policies. Under this statute the IRBs and the DBSMC have visibility of all systems that receive in excess of one million dollars in modernization funding.

The Department believes the GAO’s recommendation contradicts the tiered accountability approach in recommending that the Department, from a corporate perspective, oversee Component development and issuance of business system investment management policies and procedures. While the Department does oversee Component business system investment management decisions to the degree defined in the IRB CONOPS and has issued guidance on portfolio management processes to the Components, in accordance with tiered accountability, it does not guide or direct the Components in the formulation of the Component-level policies and procedures by which their investment decisions are reached.

RECOMMENDATION 6: The GAO recommends that the Secretary of Defense direct the Deputy Secretary of Defense, to create and modify IT portfolio selection criteria for business system investments. (p. 35/GAO Draft Report)

DOD RESPONSE: Partially Concur – The Department continues to move in the direction of maturing its portfolio management processes. Under Tiered Accountability, each Component is responsible for developing and managing its own portfolio management process; however, when it is in the best interest of DoD for a portfolio to span Components, the appropriate IRB can establish an “Enterprise Portfolio.” To date, DoD has stood up the Distribution Process Owner (DPO) Portfolio which looks at distribution processes and supporting business systems across all DoD Components. The DPO is chaired by USTRANSCOM.

With the implementation of BCL, all the IRB charters, CONOPs, and Guidance are under revision. The revised versions will clearly articulate the criteria necessary for establishing a “Enterprise Portfolio.”

Additionally, the Department has implemented the Department of Defense Instruction (DoDD) 8115.01 – “Information Technology Portfolio Management”, which defines the responsibilities for the management of DoD IT investments as portfolios within the DoD Enterprise (to include Mission Areas, Sub-portfolios, and Components).

RECOMMENDATION 7: The GAO recommends that the Secretary of Defense direct the Deputy Secretary of Defense, to analyze, select, and maintain business system investment portfolios. (p. 35/GAO Draft Report)

DOD RESPONSE: Partially Concur – The Department continues to move in the direction of maturing its portfolio management processes. Under Tiered Accountability, each Component is responsible for developing and managing its own portfolio management process; however, when it is in the best interest of DoD for a portfolio to span Components, the appropriate IRB can establish an “Enterprise Portfolio.” To date, DoD has stood up the Distribution Process Owner (DPO) Portfolio which looks at distribution processes and supporting business systems across all DoD Components. The DPO is chaired by USTRANSCOM.

The implementation of the BCL will allow the IRBs significantly improved visibility of all investments being made in given portfolios. Since each investment will be accompanied by a business case, the IRBs will have the opportunity to make investment decisions with a much broader set of criteria than is possible at the current time.

RECOMMENDATION 8: The GAO recommends that the Secretary of Defense direct the Deputy Secretary of Defense, to review, evaluate, and improve the performance of its

portfolio(s) by using project indicators such as cost, schedule, and risk. (p. 35/GAO Draft Report)

DOD RESPONSE: Partially Concur – Under existing IRB and DBSMC process and procedure IRBs and DBSMC currently review cost and schedule data as part of the investment certification and annual review processes. In an effort to understand project risk and the impact of risk on the delivery of business capability the Department has implemented the Enterprise Risk Assessment Methodology (ERAM). ERAM is currently being executed on five of the ten business MAIS programs. The output of the risk assessments will provide an analysis of the risks, impacts and mitigation strategies for given portfolio investments enabling the IRB to weigh risk impact along with cost, schedule and performance further improving investment decisions.

As stated in the March 2007 Annual Report to the Congressional Defense Committees, ERAM is a collaborative review process, bringing the functional sponsors, the program office, and experts from the acquisition community together. An ERAM team begins by reviewing existing program documentation, and then conducts face-to-face interviews with a cross-section of key program stakeholders and managers. Based on this information, the ERAM team evaluates program risk in seven key areas and delivers a risk mitigation plan as quickly as possible (ideally, within five to six weeks). The seven risk areas are:

- Strategy
- Scope/Requirement
- Contract
- Technical
- People
- Process
- External

The quick turnaround is important, because the goal is to give the sponsor and program manager targeted, actionable advice in time for them to act to keep the program focused on delivering capability.

ERAM adheres to DoD Directive 5000 Series principles that govern Defense acquisition activities. Ultimately, it is expected that ERAM will help the Department improve its acquisition of capabilities by achieving several key outcomes:

- Providing the right information needed to make sound optimized investment decisions.
- Creating a clear path for the rapid delivery of capability.
- Reducing (or removing) burdensome Overarching Integrated Process Team (OIPT) documentation and meeting requirements.

- Identifying program risks early enough so they can be avoided or mitigated.
- The overall vision for ERAM is to provide a common vehicle for collaboratively managing program risk with a focus on rapid delivery of capability at reduced cost and schedule.

RECOMMENDATION 9: The GAO recommends that the Secretary of Defense direct the Deputy Secretary of Defense, to conduct post implementation reviews for all investment tiers and direct the investment boards who are accountable for corporate business system investments, to consider the information gathered and to develop lessons learned from these reviews. (p. 36/GAO Draft Report)

DOD RESPONSE: Non-Concur –The Department disagrees that this process should be managed by the Deputy Secretary of Defense. Requiring the Deputy Secretary of Defense to perform post-implementation reviews is redundant with The Office of Management and Budget (OMB) Circular A-130, Chapter 8 b.(1).(d) that requires the agency “Conduct post-implementation reviews of information systems to validate estimated benefits and document effective management practices for broader use.” The Department will capture and leverage the lessons learned and best management practices from these component level reviews and make them available to the IRBs and across the Components. This also aligns with DoD’s tiered accountability approach.

Appendix III: GAO Contact and Staff Acknowledgments

GAO Contact

Randolph C. Hite, (202) 512-3439 or hiter@gao.gov

Staff Acknowledgments

In addition to the contact person named above, key contributors to this report were Neil Doherty, Nalani Fraser, Nancy Glover, Michael Holland, Neelaxi Lakhmani (Assistant Director), Jacqueline Mai, Sabine Paul, Niti Tandon, and Jennifer Stavros-Turner.

GAO's Mission

The Government Accountability Office, the audit, evaluation and investigative arm of Congress, exists to support Congress in meeting its constitutional responsibilities and to help improve the performance and accountability of the federal government for the American people. GAO examines the use of public funds; evaluates federal programs and policies; and provides analyses, recommendations, and other assistance to help Congress make informed oversight, policy, and funding decisions. GAO's commitment to good government is reflected in its core values of accountability, integrity, and reliability.

Obtaining Copies of GAO Reports and Testimony

The fastest and easiest way to obtain copies of GAO documents at no cost is through GAO's Web site (www.gao.gov). Each weekday, GAO posts newly released reports, testimony, and correspondence on its Web site. To have GAO e-mail you a list of newly posted products every afternoon, go to www.gao.gov and select "Subscribe to Updates."

Order by Mail or Phone

The first copy of each printed report is free. Additional copies are \$2 each. A check or money order should be made out to the Superintendent of Documents. GAO also accepts VISA and Mastercard. Orders for 100 or more copies mailed to a single address are discounted 25 percent. Orders should be sent to:

U.S. Government Accountability Office
441 G Street NW, Room LM
Washington, D.C. 20548

To order by Phone: Voice: (202) 512-6000
TDD: (202) 512-2537
Fax: (202) 512-6061

To Report Fraud, Waste, and Abuse in Federal Programs

Contact:

Web site: www.gao.gov/fraudnet/fraudnet.htm

E-mail: fraudnet@gao.gov

Automated answering system: (800) 424-5454 or (202) 512-7470

Congressional Relations

Gloria Jarmon, Managing Director, JarmonG@gao.gov (202) 512-4400
U.S. Government Accountability Office, 441 G Street NW, Room 7125
Washington, D.C. 20548

Public Affairs

Paul Anderson, Managing Director, AndersonP1@gao.gov (202) 512-4800
U.S. Government Accountability Office, 441 G Street NW, Room 7149
Washington, D.C. 20548