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United States General Accounting Office
Washington, DC 20548

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Congressional Committees

Subject: *Business Systems Modernization: Summary of GAO's Assessment of the Department of Defense's Initial Business Enterprise Architecture* (GAO-03-877R)

The Department of Defense (DOD) faces financial and related management problems that are pervasive, complex, long-standing, and deeply rooted in virtually all business operations throughout the department. These problems have impeded the department's ability to provide complete, reliable, and timely business information to the Congress, DOD managers, and other decision makers. Of the 25 areas on our governmentwide "high-risk" list, 6 are DOD program areas, and the department shares responsibility for 3 other high-risk areas that are governmentwide in scope.¹ DOD's problems in each of these areas hinder the efficiency of operations, and leave the department vulnerable to fraud, waste, and abuse.

For fiscal year 2003, DOD's information technology (IT) budget request was over \$26 billion. More specifically, to support its business operations, DOD reports that it currently relies on about 2,300 systems, including accounting, acquisition, logistics, and personnel systems that will cost about \$18 billion—nearly \$5.2 billion for business systems² and \$12.8 billion primarily for business systems infrastructure—in fiscal year 2003 to operate, maintain, and modernize. As we have previously reported,³ this environment was not designed to be, but rather has evolved into, an overly complex and error-prone environment, including (1) little standardization across DOD, (2) multiple systems performing the same tasks, (3) the same data stored in multiple systems, and (4) manual data entry into multiple systems.

One of the seven key elements we have reported⁴ as necessary to successfully reform DOD's financial and related management challenges is establishing and implementing an enterprise

¹U.S. General Accounting Office, *High-Risk Series: An Update*, [GAO-03-119](#) (Washington, D.C.: January 2003). The nine interrelated high-risk areas that represent the greatest challenge to DOD's development of world-class business operations to support its forces are contract management, financial management, support infrastructure management, inventory management, systems modernization, weapon system acquisition, human capital, information security, and real property. The last three areas are governmentwide in scope.

²Business systems include financial and nonfinancial systems, such as civilian personnel, finance, health, logistics, military personnel, procurement, and transportation, with the common element being the generation or use of financial data to support DOD's business operations.

³U.S. General Accounting Office, *DOD Financial Management: Important Steps Underway But Reform Will Require a Long-term Commitment*, [GAO-02-784T](#) (Washington, D.C.: June 4, 2002).

⁴[GAO-02-784T](#).

architecture, or modernization blueprint. In May 2001,⁵ we recommended that DOD develop, maintain, and implement an enterprise architecture to modernize its financial management operations and systems across the department. Subsequently, in its fiscal year 2002 *Performance and Accountability Report*, DOD acknowledged that deficiencies in its business systems hindered the department's ability to collect and report financial and performance information that is accurate, reliable, and timely. The report noted that to address its systemic problems and assist in the transformation of the department's business operations, the department had undertaken the development and implementation of a business enterprise architecture.

An enterprise architecture provides a clear and comprehensive picture of an entity, whether it is an organization (e.g., federal department or agency) or a functional or mission area that cuts across more than one organization (e.g., financial management). This picture consists of snapshots of both the enterprise's current or "As Is" operational and technological environment and its target or "To Be" environment, as well as a capital investment road map for transitioning from the current to the target environment. These snapshots further consist of "views," which are basically one or more architecture products that provide conceptual or logical representations of the enterprise.

The National Defense Authorization Act for Fiscal Year 2003⁶ required DOD to develop, by May 1, 2003, a financial management enterprise architecture⁷ and a transition plan for implementing the architecture to meet certain requirements. The act also requires DOD to control expenditures for financial system improvements while the architecture and transition plan are being developed and after they are completed. The act states that the enterprise architecture shall describe an information infrastructure that, at a minimum, would enable DOD to achieve certain capabilities, such as complying with all federal accounting, financial management, and reporting requirements. The act also requires development of a transition plan for implementing the enterprise architecture that includes, among other things, a schedule for phasing out existing financial management systems that will not become part of the "To Be" environment. Finally, before the architecture and transition plan are approved, the act requires DOD to review proposed obligations of funds in amounts exceeding \$1 million for financial system improvements to determine if they meet specific conditions called for in the act. Once the architecture and transition plan are approved, the act requires DOD to ensure that financial system investments are consistent with the architecture and the transition plan.

⁵U.S. General Accounting Office, *Information Technology: Architecture Needed to Guide Modernization of DOD's Financial Operations*, [GAO-01-525](#) (Washington, D.C.: May 17, 2001).

⁶Bob Stump National Defense Authorization Act for Fiscal Year 2003, Pub. L. No. 107-314, § 1004, 116 Stat. 2458, 2629, Dec. 2, 2002.

⁷In May 2003, the DOD Comptroller changed the architecture name from the Financial Management Enterprise Architecture to the Business Enterprise Architecture to reflect the transformation of departmentwide business operations and supporting systems, including accounting and finance, budget formulation, acquisition, inventory management, logistics, personnel, and property management systems.

The act directs us to submit to congressional defense committees, within 60 days of DOD's approval of its enterprise architecture and its transition plan, an assessment of DOD's actions taken to comply with these requirements. (See enc. I for a copy of section 1004 of the act.) As agreed with your offices, our objectives were to determine (1) the extent to which DOD's actions complied with the requirements of the act and (2) DOD's plans for further development and implementation of its enterprise architecture. This report transmits a summary of the results of our assessment as well as a brief discussion of our key observations. (See enc. II for a summary of our assessment approach.) We plan to issue a more detailed report of our assessment results, including conclusions and specific recommendations. We performed our work from March 2003 through June 2003 in accordance with U.S. generally accepted government auditing standards. On June 30, 2003, DOD provided us with written comments on a draft of this report, which are addressed in the "Agency Comments and our Evaluation" section and are reprinted in enclosure III.

Summary of Observations

As we reported in February 2003,⁸ DOD undertook a challenging and ambitious task—to develop within 1 year a departmentwide architecture for modernizing its current financial and business operations and systems. Thus far, DOD has expended tremendous effort and resources and made important progress in complying with the legislative requirements aimed at developing and effectively implementing a well-defined enterprise architecture. Further, DOD's initial version of its business enterprise architecture provides a foundation from which to build and ultimately produce a well-defined business enterprise architecture. However, the initial version does not adequately address the act's requirements and other relevant architectural requirements.⁹ For example, the architecture does not adequately describe the accounting and financial management requirements and the logical database model, which includes data standards and is used to guide the creation of the physical databases where information will be stored. Moreover, DOD has yet to implement an effective investment management process for controlling ongoing and planned business system improvements, including one that meets the act's requirements for ensuring that obligations in excess of \$1 million are consistent with the architecture and the transition plan. Collectively, this means that DOD has taken a positive first step, but much remains to be accomplished before DOD will have the kind of blueprint and associated investment controls to successfully modernize its business operations and supporting systems.

⁸U.S. General Accounting Office: *DOD Business Systems Modernization: Improvements to Enterprise Architecture Development and Implementation Efforts Needed*, [GAO-03-458](#) (Washington, D.C.: Feb. 28, 2003).

⁹See for example, Office of Management and Budget, *Federal Enterprise Architecture Business Reference Model*, Version 1.0 (2002); Chief Information Officer Council, *A Practical Guide to Federal Enterprise Architecture*, Version 1.0 (February 2001); Office of Management and Budget Circular No. A-130, *Management of Federal Information Resources* (Nov. 28, 2000); M.A.Cook, *Building Enterprise Information Architectures: Reengineering Information Systems* (Upper Saddle River, N.J.: Prentice Hall, 1996); and National Institute of Standards and Technology, *Information Management Directions: The Integration Challenge*, Special Publication 500-167 (September 1989).

DOD's position is that, to varying degrees, the initial version of its architecture fully satisfies the act's requirements, but it also recognizes that the architecture needs to be expanded and extended to provide a sufficient basis for guiding and constraining investment decisions. DOD's position is also that it has taken steps to implement the act's requirements regarding approving system investments but that it needs to do more to effectively select and control system investments. DOD attributes the current state of its architecture and investment management processes to the limited time it has had to define and implement each, in part because it was overly optimistic in estimating what it could deliver by May 1, 2003. Until DOD develops and provides for effective implementation of a well-defined enterprise architecture, its ability to modernize its business and systems environments in a way that minimizes risk and maximizes return on investment will be severely hindered.

Key Observations on Compliance with Enterprise Architecture Requirements

The department has established some of the architecture management capabilities advocated by best practices and federal guidance.¹⁰ Among these are having a program office staffed with representatives from across the DOD components, designating a chief architect, and using an architecture development methodology and automated tool. Further, it has adopted an incremental approach to developing its architecture and, according to DOD, has approved an initial version of its architecture that it intends to use as a foundation upon which to build. The initial version includes a suite of diagrams, tables, and other representations that describe, to varying degrees, its "As Is" and "To Be" architectural environments. For example, the "As Is" descriptions include an inventory of about 2,300 systems in operation or under development, and their characteristics, that support DOD's current business operations. The "To Be" descriptions address, to at least some degree, how DOD intends to operate in the future, what information will be needed to support these future operations, and what technology standards should govern the design of future systems.

DOD has also incorporated many relevant federal accounting, financial management, and reporting requirements from 152 federal sources in its "To Be" architecture products. Of the total 4,000 external requirements included in the initial architecture, our review of 1,767 Joint Financial Management Improvement Program (JFMIP)¹¹ requirements, identified 340 (about 19 percent) that are not included or adequately addressed. For example, federal accounting requirements for recording revenue are not included. According to program officials, critical external requirements are not included or adequately addressed primarily because a fully functioning quality assurance process to validate the requirements was not in place when the requirements were elicited. As a result, the architecture's descriptions of

¹⁰U.S. General Accounting Office, *Information Technology: A Framework for Assessing and Improving Enterprise Architecture Management (Version 1.1)*, [GAO-03-584G](#) (Washington, D.C.: April 2003).

¹¹JFMIP is a joint undertaking of the Department of the Treasury, GAO, the Office of Management and Budget, and the Office of Personnel Management, working with each other, other agencies, and the private sector to improve financial management in the federal government. JFMIP requirements arise from various public laws, regulations, bulletins, circulars, federal accounting standards, and leading practices and are applicable governmentwide. Agencies must use these requirements, in addition to agency-unique mission requirements, in planning and implementing their financial management improvement projects.

certain business processes, such as those associated with revenue accounting and reporting, which include over \$70 billion earned annually by DOD working capital fund activities, are not yet sufficiently complete for making informed decisions on systems. Department and contractor officials agreed that these system requirements were either excluded or not adequately addressed and stated that a subsequent version of the architecture would include or modify the requirements.

Additionally, the “As Is” and “To Be” architecture products and the transition plan do not include a number of items recommended by relevant architectural guidance.¹² Program officials agreed that the initial version of the architecture does not contain the scope and detail needed to acquire business system solutions for its “To Be” environment. Program officials attribute this to DOD’s being overly optimistic in determining what it could develop by May 1, 2003. In an effort to manage this expectation gap, DOD officials are using an incremental approach for developing and implementing the architecture.

Specifically, the “As Is” view of the current architecture does not include the following items:

- descriptions of current business operations in terms of the entities/people that perform the functions, processes, and activities, and the locations where the functions, processes, and activities are performed;
- data/information being used by the functions, processes, and activities;
- technology standards being employed;
- security standards and tools being used; and
- performance metrics being used.

As a result, DOD does not have a sufficiently described picture of its “As Is” environment to permit development of a meaningful and useful transition plan that either identifies the proper sequence of changes needed to move from its current operating environment to its future target environment, or effectively provides for guiding and constraining investments in modernized systems.

Additionally, the “To Be” view of the current architecture version does not include the following items:

- specific organization and location information, which defines the entities/people that will perform the functions, processes, and activities, and specifies where the functions, processes, and activities will be performed;
- physical descriptions of systems or applications to be developed or acquired;

¹²See for example, Office of Management and Budget, *Federal Enterprise Architecture Business Reference Model*, Version 1.0 (2002); Chief Information Officer Council, *A Practical Guide to Federal Enterprise Architecture*, Version 1.0 (February 2001); Office of Management and Budget Circular No. A-130, *Management of Federal Information Resources* (Nov. 28, 2000); M.A.Cook, *Building Enterprise Information Architectures: Reengineering Information Systems* (Upper Saddle River, N.J.: Prentice Hall, 1996); and National Institute of Standards and Technology, *Information Management Directions: The Integration Challenge*, Special Publication 500-167 (September 1989).

- the physical infrastructure (e.g., hardware and systems software) that will be needed to support the business systems; and
- the organizations that will be accountable for security and their roles and responsibilities.

Further, we found that the logical database model, which includes data standards and is used to guide the creation of the physical databases where information will be stored, is not linked to a conceptual data model. This raises concern regarding the utility of the logical model in supporting information flows for business operations and systems.

As a result, the “To Be” environment lacks the details needed to identify and plan for system solutions and operational change, and enable DOD to routinely provide timely, accurate, and reliable information for management decision making. In addition, the “To Be” environment precludes the department from making informed system investment decisions.

Aside from the “To Be” architecture’s lack of detail, its structure is difficult to navigate, thus constraining its ease of use and understandability. For example, the architecture does not include user instructions or guidance, and certain artifacts (e.g., diagrams) could not be read on-line because there was no “zoom” capability enabling enlargement. Further, specific content, such as the applicability of security standards to specific security services, were difficult to locate. While we were able to read certain artifacts and locate specific content after extraordinary effort, it is reasonable to expect that other users would also encounter difficulty navigating through the architecture products. As a result, users may not have a good understanding of the architecture’s content for use in making informed decisions.

The transition plan is also missing important items, such as

- a gap analysis identifying the needed changes to current business processes and systems;
- an identification of which of the 2,300 current business systems will not become part of the “To Be” architecture as well as the time frames for phasing out these systems;
- a time-based strategy for replacing legacy systems, including identification of intermediate (i.e., migration) systems that may be temporarily needed; and
- a statement of resources (e.g., funding and staff) needed to transition to the target environment.

As a result, DOD does not yet have a meaningful and reliable basis for managing the disposition of its existing inventory of about 2,300 systems or for sequencing the introduction of modernized business operations and supporting systems.

In June 2003,¹³ DOD’s verification and validation contractor also assessed the initial architecture against relevant best practices to determine its quality. Consistent with our assessment, this contractor reported that while DOD’s architecture contained significant content, it lacked the depth and detail needed to begin building and implementing

¹³MITRE Technical Report: *Review of Financial Management Enterprise Architecture (FMEA), Version 1.0*, June 2003.

modernized systems and making operational changes. Further, the contractor reported that the architecture was not easily understandable and that its utility to stakeholders in system acquisition planning was limited.

With regard to DOD's actions to control ongoing and planned business systems investments, DOD has not yet defined and implemented an effective approach to select and control business system investments exceeding \$1 million while the architecture is being developed and after it is completed. Program officials stated that the department's current approach to selecting and controlling business system investments depends on the system owners coming forward with the request for approval, and that it has not established the means to determine which systems should be submitted for review. Program officials acknowledge that the department, at a minimum, could use DOD's IT budget documentation to proactively fulfill the act's requirements and strengthen the investment management process. Since enactment of the National Defense Authorization Act for Fiscal Year 2003, DOD has approved one business system improvement that met this \$1 million threshold and is currently reviewing four others. Our analysis of DOD's fiscal years 2003 and 2004 IT budget requests shows that over 200 systems in each year's budget, totaling about \$4 billion per year, could have resulted in obligations of funds that meet the \$1 million threshold. As a result, the vast majority of the billions of dollars that DOD invests in business system improvements annually have not been subject to the specific investment control process called for in the act.

Key Observations on DOD's Plans for Evolving and Extending Its Enterprise Architecture and for Improving Business System Investment Decision Making

According to program officials and the initial version of the transition plan, DOD intends to extend and evolve the architecture to include missing scope and detail. However, it has not defined specific plans outlining how this will be accomplished. Rather, DOD's current plan is to develop a strategy for producing the next version of its architecture and managing ongoing and planned investments. Among other things, this strategy is to provide for

- determining the resources needed to further develop the architecture;
- developing a methodology for integrating the architecture with other internal and external architectures;
- establishing an approach for maintaining its existing systems inventory; and
- evaluating the architecture for completeness, accuracy, and integration of end-to-end business processes and system functions.

In addition, DOD program documentation provides for initiating pilot projects in the near term that are to demonstrate and implement a portion of the architecture and be usable across the department. However, DOD officials stated that the pilot projects are intended to validate departmentwide business processes and not to implement production systems. Because of these differing views of what the pilot projects are intended to achieve, the purpose and scope of these projects remain unclear and specific projects have yet to be selected. If DOD intends for these projects to demonstrate or validate an enterprisewide business process to address a current deficiency in DOD's business operations and systems, such as the lack of common data standards, these projects could help DOD improve its architecture and thus

may represent reasonable investments. However, if the pilot projects are to be used to acquire and implement system solutions and place them into production to achieve an operational capability, it is unclear how DOD will ensure architecture alignment and manage the risk associated with investing in even more systems before it has a well-defined blueprint and an effective investment management process to guide and control them.

With regard to DOD's plans for improving investment management controls, DOD has a proposed governance concept that describes how and by whom business transformation requirements identified by the architecture will be implemented in the department. This proposal vests domain owners (DOD business line representatives, such as those in logistics, human resource management, and acquisition/procurement) with the authority, responsibility, and accountability for business transformation, extension and implementation of the architecture, development and execution of the transition plan, and investment portfolio management for their domains. However, it is not clear how the proposed approach, including the act's requirements, will be implemented. Further, it is not clear, given the incomplete state of version 1.0 of the architecture (1) how the domain owners will ensure consistency across domains for architecture extensions and changes and (2) how the proposed approach will address our prior recommendations for establishing a hierarchy of investment review boards that use an explicit and common set of criteria for selecting, controlling, and evaluating IT projects as a portfolio of competing investment options. One criterion we recommended was to ensure consistency and compliance with ongoing architecture development efforts.¹⁴ As a result, the department does not have a critical structure in place to effectively select and control its IT investments, and runs the risk of continuing to invest in systems that perpetuate its existing incompatible, duplicative, overly costly environment of about 2,300 business systems that do not optimally support mission performance.

Agency Comments and Our Evaluation

In commenting on a draft of this report (reprinted in enc. III), DOD generally agreed with our assessment of the department's initial business enterprise architecture and recognized that "much work remains to be done." It then described this work as beginning the transition from its "As Is" environment to the "To Be" as defined in the architecture. DOD stated that its approach for transitioning focuses on reengineering its business processes incrementally and then selecting business system solutions to implement the new methods and practices. However, as we reported, the initial version of the architecture lacks the scope and content needed to provide a sufficient frame of reference for moving the department from its current operating environment to its future target environment. Moreover, we stated in the report that DOD's plans for extending and evolving the architecture have yet to be adequately defined. While reengineering business processes is a logical component of what needs to be done to evolve the architecture, our report identifies many other aspects of the architecture, and the transition, that need to be further defined before DOD will have a sufficient basis for evaluating and selecting business system solutions.

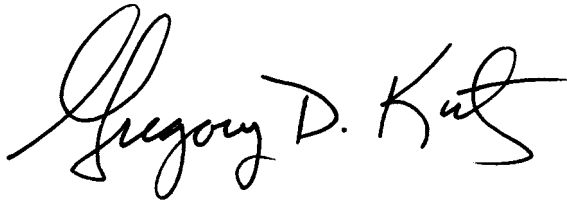
¹⁴[GAO-03-458](#).

DOD's comments also recognized the need to manage and control its ongoing and planned business system investments, and stated that it has defined an approach for doing so in draft guidance and would use its transformation governance structure to implement the investment management process. This guidance is still in draft and DOD has not provided it to us. Therefore, we could not determine whether it addresses the limitations in the department's existing approach to select and control its business system investments or the uncertainties associated with its proposed investment governance approach, both of which are discussed in this report.

Last, DOD's comments noted that the cost to operate, maintain, and modernize its approximately 2,300 systems is about \$5 billion and that \$13 billion provides infrastructure for all DOD systems and includes spending on nonbusiness (e.g., command and control or intelligence) systems. We do not agree. Specifically, our analysis of DOD's total IT budget request for fiscal year 2003 shows approximately \$26 billion, of which \$5 billion relates to the operation, maintenance, and modernization of DOD's business systems; about \$13 billion relates primarily to the infrastructure to support these business systems; and the remaining \$8 billion relates primarily to command and control systems, including the infrastructure to support these systems.

We will be sending copies of this report to interested congressional committees; the Director, Office of Management and Budget; the Secretary of Defense; the Under Secretary of Defense (Comptroller); the Assistant Secretary of Defense (Networks and Information Integration)/Chief Information Officer; the Under Secretary of Defense (Acquisition, Technology, and Logistics); the Under Secretary of Defense (Personnel and Readiness); and the Director, Defense Finance and Accounting Service. This report will also be available at no charge on our Web site at <http://www.gao.gov>.

If you have any questions concerning this information, please contact Gregory Kutz at (202) 512-9095 or kutzg@gao.gov or Randolph Hite at (202) 512-3439 or hiter@gao.gov. GAO contacts and key contributors to this report are listed in enclosure IV.

A handwritten signature in black ink that reads "Gregory D. Kutz". The signature is fluid and cursive, with the first letters of each word being capitalized and prominent.

Gregory D. Kutz
Director, Financial Management and Assurance

A handwritten signature in black ink that reads "Randolph C. Hite". The signature is fluid and cursive, with the first letters of each word being capitalized and prominent.

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

Enclosures

List of Committees

The Honorable Ted Stevens
Chairman
The Honorable Robert C. Byrd
Ranking Minority Member
Committee on Appropriations
United States Senate

The Honorable John W. Warner
Chairman
The Honorable Carl Levin
Ranking Minority Member
Committee on Armed Services
United States Senate

The Honorable C.W. Bill Young
Chairman
The Honorable David R. Obey
Ranking Minority Member
Committee on Appropriations
House of Representatives

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

The Honorable Jim Saxton
Chairman
The Honorable Martin T. Meehan
Ranking Minority Member
Subcommittee on Terrorism, Unconventional Threats and Capabilities
Committee on Armed Services
House of Representatives

SEC. 1004. [of Public Law 107-314] DEVELOPMENT AND IMPLEMENTATION OF FINANCIAL MANAGEMENT ENTERPRISE ARCHITECTURE

(a) REQUIREMENT FOR ENTERPRISE ARCHITECTURE AND FOR TRANSITION PLAN—

Not later than May 1, 2003, the Secretary of Defense shall develop—

- (1) a financial management enterprise architecture for all budgetary, accounting, finance, enterprise resource planning, and mixed information systems of the Department of Defense; and
- (2) a transition plan for implementing that financial management enterprise architecture.

(b) COMPOSITION OF ENTERPRISE ARCHITECTURE—

(1) The financial management enterprise architecture developed under subsection (a)(1) shall describe an information infrastructure that, at a minimum, would enable the Department of Defense to—

- (A) comply with all Federal accounting, financial management, and reporting requirements;
 - (B) routinely produce timely, accurate, and reliable financial information for management purposes;
 - (C) integrate budget, accounting, and program information and systems; and
 - (D) provide for the systematic measurement of performance, including the ability to produce timely, relevant, and reliable cost information.
- (2) That enterprise architecture shall also include policies, procedures, data standards, and system interface requirements that are to apply uniformly throughout the Department of Defense.

(c) COMPOSITION OF TRANSITION PLAN—The transition plan developed under subsection (a)(2) shall include the following:

- (1) The acquisition strategy for the enterprise architecture, including specific time-phased milestones, performance metrics, and financial and nonfinancial resource needs.
- (2) A listing of the mission critical or mission essential operational and developmental financial and nonfinancial management systems of the Department of Defense, as defined by the Under Secretary of Defense (Comptroller), consistent with budget justification documentation, together with
 - (A) the costs to operate and maintain each of those systems during fiscal year 2002; and
 - (B) the estimated cost to operate and maintain each of those systems during fiscal year 2003.
- (3) A listing of the operational and developmental financial management systems of the Department of Defense as of the date of the enactment of this Act (known as ‘legacy systems’) that will not be part of the objective financial and nonfinancial management system, together with the schedule for terminating those legacy systems that provides for reducing the use of those legacy systems in phases.

(d) **CONDITIONS FOR OBLIGATION OF SIGNIFICANT AMOUNTS FOR FINANCIAL SYSTEM IMPROVEMENTS**—An amount in excess of \$1,000,000 may be obligated for a defense financial system improvement only if the Under Secretary of Defense (Comptroller) makes a determination regarding that improvement as follows:

(1) Before the date of an approval specified in paragraph (2), a determination that the defense financial system improvement is necessary for either of the following reasons:

(A) To achieve a critical national security capability or address a critical requirement in an area such as safety or security.

(B) To prevent a significant adverse effect (in terms of a technical matter, cost, or schedule) on a project that is needed to achieve an essential capability, taking into consideration in the determination the alternative solutions for preventing the adverse effect.

(2) On and after the date of any approval by the Secretary of Defense of a financial management enterprise architecture and a transition plan that satisfy the requirements of this section, a determination that the defense financial system improvement is consistent with both the enterprise architecture and the transition plan.

(e) **CONGRESSIONAL REPORTS**—Not later than March 15 of each year from 2004 through 2007, the Secretary of Defense shall submit to the congressional defense committees a report on the progress of the Department of Defense in implementing the enterprise architecture and transition plan required by this section. Each report shall include, at a minimum—

(1) a description of the actions taken during the preceding fiscal year to implement the enterprise architecture and transition plan (together with the estimated costs of such actions);

(2) an explanation of any action planned in the enterprise architecture and transition plan to be taken during the preceding fiscal year that was not taken during that fiscal year;

(3) a description of the actions taken and planned to be taken during the current fiscal year to implement the enterprise architecture and transition plan (together with the estimated costs of such actions); and

(4) a description of the actions taken and planned to be taken during the next fiscal year to implement the enterprise architecture and transition plan (together with the estimated costs of such actions).

(f) **COMPTROLLER GENERAL REVIEW**—Not later than 60 days after the approval of an enterprise architecture and transition plan in accordance with the requirements of subsection (a), and not later than 60 days after the submission of an annual report required by subsection (e), the Comptroller General shall submit to the congressional defense committees an assessment of the extent to which the actions taken by the Department comply with the requirements of this section.

(g) **DEFINITIONS**—In this section:

(1) The term ‘defense financial system improvement’ means the acquisition of a new budgetary, accounting, finance, enterprise resource planning, or mixed information system for the Department of Defense or a modification of an existing budgetary, accounting, finance, enterprise resource planning, or mixed information system of the Department of Defense. Such term does not include routine maintenance and operation of any such system.

(2) The term ‘mixed information system’ means an information system that supports financial and non-financial functions of the Federal Government as defined in Office of Management and Budget Circular A-127 (Financial management Systems).

(h) REPEAL—(1) Section 2222 of title 10, United States Code, is repealed. The table of sections at the beginning of chapter 131 of such title is amended by striking the item relating to such section.

(2) Section 185(d) of such title is amended by striking ‘has the meaning given that term in section 2222(c)(2) of this title’ and inserting ‘means an automated or manual system from which information is derived for a financial management system or an accounting system’.

Summary of Assessment Approach

To accomplish our objectives for determining (1) the extent to which DOD's actions complied with the requirements of section 1004 of Public Law 107-314 and (2) DOD's plans for further development and implementation of the architecture, we assessed DOD's initial architecture, which the DOD Comptroller transmitted to the Comptroller General on May 8, 2003. Consistent with the act and as agreed with congressional defense committees' staffs, this assessment focused on compliance with all federal accounting, financial management, and reporting requirements; the content of the "As Is" and "To Be" environments; the content of the transition plan to include time-phased milestones for phasing out existing systems, resource needs for implementing the "To Be" environment, and information on the systems inventory; and the extent to which DOD is controlling its business system investments.

We also used our *Enterprise Architecture Management Maturity Framework*¹⁵ that describes the five stages of management maturity to determine the extent to which DOD has adopted key elements of architecture management best practices. To make this determination, we reviewed program documentation, such as program policies and procedures and architecture products, and compared them to the elements in the framework.

Specific to our review of federal requirements, we could not determine whether the architecture contained all federal accounting, financial management and reporting requirements because a central repository of all such requirements does not exist. Nevertheless, to assess the completeness of the federal requirements, we compared the about 4,000 external¹⁶ requirements contained in the architecture to those listed in selected JFMIP¹⁷ federal systems requirements publications. The JFMIP requirements consisted of about 45 percent of the total external requirements. We performed a detailed review of 1,767 of the JFMIP requirements.

To review the "As Is" and "To Be" environments and the transition plan, we decomposed version 1.0 of the architecture into various parts and components and made a comparison against relevant benchmarks. More specifically, we first divided the architecture into the three primary component parts specified in the act and recognized in best practices and federal guidance: the "As Is" architecture, the "To Be" architecture, and the transition plan. We then divided the "As Is" and the "To Be" architectures into the six architectural

¹⁵[GAO-03-584G](#).

¹⁶External requirements are those that are obtained from authoritative sources and constrain various aspects of the architecture.

¹⁷We used nine JFMIP systems requirements documents: revenue, acquisition, core financial, human resources and payroll, managerial cost accounting, inventory, travel, property management, and benefits.

components. We then compared version 1.0 to (1) relevant criteria¹⁸ governing the content of key architectural elements for the transition plan and (2) the six components of the “As Is” and “To Be” architectures. In addition, we reviewed comments from DOD’s verification and validation contractor (MITRE).

To review DOD’s actions to comply with the \$1 million obligation threshold for financial system improvements, we obtained and reviewed memorandums and other documentation regarding the approval of expenditures for system investments in excess of \$1 million. We also reviewed and analyzed the DOD IT budget requests for fiscal years 2003 and 2004 to identify systems that met the \$1 million threshold and compared this to the total number of systems DOD reviewed and approved to measure the extent of systems that potentially should be reviewed.

To determine DOD’s plans for further development and implementation of the architecture, we reviewed the performance work statement; DOD’s proposed governance concept, including domain owner roles and responsibilities; and program documentation pertaining to plans for implementing pilot projects. We also reviewed the status of DOD’s response to our prior recommendations pertaining to controlling ongoing and planned IT systems investments.

To augment our document reviews and analyses, we interviewed officials from various DOD organizations and contractors, including the Office of the Under Secretary of Defense (Comptroller); Office of the Under Secretary of Defense (Acquisition, Technology, and Logistics); Office of the Under Secretary of Defense (Personnel and Readiness); IBM; and MITRE Corporation.

We conducted our work primarily at DOD headquarters offices in Washington, D.C., and Arlington, Virginia, from March 2003 through June 2003 in accordance with U.S. generally accepted government auditing standards. On June 30, 2003, DOD provided us with written comments on a draft of this report, which are addressed in the “Agency Comments and Our Evaluation” section and are reprinted in enclosure III.

¹⁸See for example, Office of Management and Budget, *Federal Enterprise Architecture Business Reference Model*, Version 1.0 (2002); Chief Information Officer Council, *A Practical Guide to Federal Enterprise Architecture*, Version 1.0 (February 2001); Office of Management and Budget Circular No. A-130, *Management of Federal Information Resources* (Nov. 28, 2000); M.A.Cook, *Building Enterprise Information Architectures: Reengineering Information Systems* (Upper Saddle River, N.J.: Prentice Hall, 1996); and National Institute of Standards and Technology, *Information Management Directions: The Integration Challenge*, Special Publication 500-167 (September 1989).

Comments from the Department of Defense



COMPTROLLER

UNDER SECRETARY OF DEFENSE
1100 DEFENSE PENTAGON
WASHINGTON DC 20301-1100



JUN 30 2003

Mr. Gregory Kutz
Director
Financial Management and Assurance
United States General Accounting Office
Washington, DC 20548

Dear Mr. Kutz:

This is in response to the General Accounting Office (GAO) Draft Report, GAO-03-877R, "Business Systems Modernization: Summary of GAO's Assessment of Department of Defense's Initial Business Enterprise Architecture," dated June 23, 2003.

As recognized in the report, "the Department of Defense (DoD) undertook a challenging and ambitious task—to develop within 1 year a Department-wide architecture for modernizing its current financial and business operations and systems. The DoD has expended tremendous effort and made important progress.... and the DoD's initial version of the Business Enterprise Architecture (BEA) provides a foundation from which to build... and ultimately produce a well-defined business enterprise architecture."

The Department is proud of the initial version of the BEA and Transition Plan, which were delivered on time and under budget. However, we agree that much work remains to be done. The Department's architecture is the largest, most complex, and most pervasive business enterprise architecture developed to date, either in the public or private sectors. The BEA applies not only to financial management, but also to the enormous number and types of business transactions that support the Department's budget formulation, acquisition, inventory management, logistics, personnel, and property management businesses. The BEA, therefore, is a blueprint for interconnecting the Department's business processes, data, and systems in order to obtain enterprise-wide performance efficiency and results.

We are now entering another challenging phase of the program—to begin the transition from our current "as is" environment to the "to be" as defined in the architecture. Our approach will focus on reengineering our business processes and then selection of the business system solutions to implement the new methods and practices. This reengineering effort will be done incrementally. The first increment will implement the foundation of the architecture and key business processes. Examples are the use of the United States Standard General Ledger, a standard accounting code structure, data standards, storage and retrieval of data, and logistics business processes coupled with the related acquisition and accounting processes.

As we move forward, we recognize the need to manage and control our ongoing and planned business system investments. Our approach to do this is defined in the draft DoD Directive, "Information Technology (IT) Capital Planning and Investment Control (CPIC)



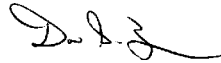
Portfolio Management,” and draft DoD Instruction, “Operation of the IT CPIC Portfolio Management System.” We will use our transformation governance structure to implement the investment review process.

In a related matter, the GAO draft report states, “To support business operations, DoD reports that it currently relies on about 2,300 systems including accounting, acquisition, logistics, and personnel systems that will cost \$18 billion in Fiscal Year (FY) 2003 to operate, maintain and modernize.” We believe approximately \$5 billion is more accurate—the remaining \$13 billion provides infrastructure for all DoD systems and includes spending on nonbusiness (e.g., command and control or intelligence) systems.

The Department will address specific comments to the detailed report that the GAO plans to release in the near future. That report is expected to include the GAO’s assessment results, conclusions, and specific recommendations.

My point of contact for this matter is Ms. Marilyn Fleming, Chief Architect, Directorate for Business Modernization and Systems Integration. She may be contacted by email: flemingm@osd.pentagon.mil or by telephone at (703) 607-3367.

Sincerely,



Dov S. Zakheim

Enclosure IV

GAO Contacts and Staff Acknowledgments

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Acknowledgments In addition to the individuals named above, key contributors to this report included Beatrice Alff, Nabajyoti Barkakati, Justin Booth, Francine DeVecchio, Francis Dymond, Neelaxi Lakhmani, Anh Le, Evelyn Logue, Mai Nguyen, Darby Smith, Stacey Smith, Alan Steiner, Randolph Tekeley, and William Wadsworth.

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