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Report to the Chairman, Committee on
Governmental Affairs, U.S. Senate

April 1994

DEFENSE MANAGEMENT

Stronger Support Needed for Corporate Information Management Initiative To Succeed





**United States
General Accounting Office
Washington, D.C. 20548**

**Accounting and Information
Management Division**

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April 12, 1994

**The Honorable John Glenn
Chairman, Committee on Governmental Affairs
United States Senate**

Dear Mr. Chairman:

The Department of Defense faces huge challenges in effectively managing its diverse operations as it downsizes its forces and activities. It has already made reductions to its force structure, and more are planned. At the same time, trimming operational support costs by designing more efficient work processes, integrating essential data systems, and automating more program and administrative operations is essential to achieving productivity gains. To help meet this challenge, Defense began its Corporate Information Management (CIM) initiative in October 1989.

CIM entails a major effort to improve Defense operations and administrative support by streamlining business processes, upgrading information systems, and improving data administration and other technical areas. The initiative encompasses all Defense functional areas including Command and Control, Finance, Material Management, Distribution, Procurement, and Human Resources. The Department spends a reported \$88 billion annually on these activities and estimated in 1991 that it would be able to save billions through implementation of CIM.¹

Based on your January 26, 1994, request and discussions with your office, we evaluated Defense's efforts in implementing the CIM initiative. This report provides an overview of our assessment of the Department's progress in improving business processes and information systems and identifies problems that must be addressed for the initiative to succeed. In addition, this report is one of several responding to your request that we review key Defense efforts supporting CIM implementation. A list of related reports is presented at the end of this report.

Results in Brief

Defense's efforts to reengineer its business processes, standardize and integrate data, and improve its information systems under CIM have yielded mixed results to date. Over the past 4 years, Defense has had some success in implementing CIM in certain functional areas, such as

¹We reported in 1991 that although some level of savings may be possible, Defense's estimated \$2.2 billion savings was not supported by any data or analysis. Defense ADP: Corporate Information Management Savings Estimates Are Not Supported (GAO/IMTEC-91-18, February 22, 1991).

Distribution and Health Affairs, but in other areas gains have been marginal.

Defense also does not know how much it has spent on CIM. While the Department has reported spending over \$9 billion annually on automated data processing costs, the portion attributable to CIM is difficult to identify because most implementation efforts have not been funded or tracked centrally. Instead, funds are spent through a widely diverse set of activities and budgets. Major investments in reengineered processes and systems should be made based on assessments of costs and benefits; the Department needs to collect reliable cost information, complete functional economic analyses, and conduct post-audits to ensure wise decisionmaking.

Implementing sweeping management reforms such as the CIM initiative is an extremely difficult endeavor. However, Defense must significantly alter its management approach in order for CIM to have any chance to fully succeed. First, Defense must develop a cohesive, complete strategic plan for CIM, one that clearly provides goals, objectives, responsibilities, and milestones and provides performance measures to assess progress. Without a well-articulated plan Defense's CIM efforts will continue to be fragmented and uneven. Moreover, confusion and misunderstanding about what is to be achieved will linger and further erode the credibility of the effort.

Second, Defense's implementation approach should shift more effort to reengineering business processes and systems, rather than devoting the majority of its attention to making short-term efforts to standardize systems. While both are important, most productivity gains will come from reengineering processes and information systems and integrating them across functional lines. Because little work has been done to reengineer processes, gains have been minimal, and Defense is at risk of merely automating existing inefficient processes.

Finally, Defense has not operated CIM in a manner to ensure continuous top management commitment and garner support among critical mid-level managers. To date, CIM has been perceived as a lower priority in Defense than its importance warrants, and actions necessary to achieve progress have been difficult to effect. Without greater support from all management levels CIM cannot produce meaningful cultural and technical change and achieve its goals. In addition, without adequate authority to direct resources to priority needs and departmentwide goals, managers cannot

effectively implement CIM. Also, Defense does not have a Chief Information Officer who would support top Defense managers in accomplishing CIM's objectives.

Background

To meet the goal of operating more efficiently, the Deputy Secretary of Defense laid the foundation for CIM in October 1989 by forming an Executive Level Group (ELG) of high-level industry and Defense officials. This group was convened to evaluate Defense business practices and suggest an overall direction for the Department. It noted that Defense has traditionally viewed information management as merely automating existing business processes in order to cut costs.

The ELG observed that when new technology was applied, the benefits often did not materialize. This was principally because little effort was made to first improve processes. The ELG recommended that the Department adopt a management philosophy that emphasizes improving business methods before identifying specific computing and communications technologies.

The Department endorsed the ELG's recommended approach and formally established CIM. The initiative is intended to be primarily a top-down effort to simplify and improve functional processes by (1) documenting business goals, methods, and performance measures, (2) identifying and developing improved business processes and data requirements, and (3) evaluating and applying information technology to support these improved business processes. Conceptually, CIM emphasizes continuous improvement of business methods and incremental gains through the use of techniques such as best practices. In addition, management also adopted a strategy to achieve short-term benefits. Under this "migration" strategy², Defense is selecting its best existing or "legacy" systems to effect immediate cost savings and standardization to pave the way for moving to the eventual "target" systems.

In January 1991, the Deputy Secretary of Defense approved a CIM implementation plan developed by the Office of the Assistant Secretary of Defense for Command, Control, Communications and Intelligence (C3I)—the Assistant Secretary for C3I is responsible for setting policy and implementing CIM. In August 1992, the Director of Defense Information

²For example, the military services each have their own civilian payroll systems. Under this concept, Defense plans to implement the Defense Civilian Pay System and eliminate systems including the Air Force Civilian Automated Pay System, the Standard Army Civilian Payroll System, the Marine Corps Automated Leave/Pay System, and several Navy systems.

issued draft guidance on improving business processes within functional areas. A basic tenet of this plan and guidance is that Defense should manage and implement business improvements along functional lines.

This is a major shift because each military service and Defense agency has historically managed its own business functions, such as Procurement, Finance, and Health. Under Defense Directive 8000.1, "Defense Information Management Program", which establishes policy for implementing CIM, senior functional officials, known as Principal Staff Assistants (PSA), are now responsible for implementing improvements within the Department's business functions across service and agency lines. These officials, generally at the Assistant Secretary of Defense level, are responsible for evaluating their respective business areas, reengineering them as required, and identifying information systems and technology needed for support.

Scope and Methodology

To address our objective of evaluating Defense's progress toward improving its business processes, information systems and technology under CIM, we reviewed Defense's plans, policies, procedures, directives, and memoranda related to the initiative. These included Defense's CIM Implementation Plan, draft Enterprise Model³ and draft manual 8020.1M on performing functional process improvement. We also reviewed reports and assessments of CIM performed by other organizations between January 1993 and February 1994. These were performed by the Information Technology Association of America, George Mason University's Institute of Public Policy, Booz-Allen and Hamilton, Inc., and the Defense Inspector General. Appendix I summarizes the findings and scope of each study.

We evaluated Defense's progress in implementing CIM by assessing nine functional areas.⁴ We selected these areas based on availability of data and their importance. Specifically, we (1) discussed the status of CIM efforts with functional area managers, (2) reviewed pertinent documentation, (3) analyzed the Department's January 31, 1994, submission to you describing the functional areas' progress in implementing CIM, and

³Defense's Enterprise Model (draft) is an effort to demonstrate the interrelationships between functional areas and the potential for cross-functional integration. Defense plans to use this model to decrease functional and system "stovepiping" and maximize benefits and savings from CIM.

⁴The nine functional areas we assessed are depot maintenance, material management, distribution, procurement, finance, health affairs, command and control, human resources, and reserve components.

(4) analyzed information from other ongoing and prior work we have performed in the functional areas.

For each functional area, we then assigned a rating reflecting our assessment of the implementation status for each of the steps necessary to implement CIM. The ratings used to describe Defense's efforts are (1) substantially complete, (2) underway but incomplete, and (3) just beginning. We discussed our assessments with Defense Information Management staff in the Office of the Secretary of Defense (OSD) and made changes to reflect their views.

In addition, we interviewed senior OSD officials including the Assistant Secretary of Defense for CSI and the Deputy Assistant Secretary of Defense for Information Management. We interviewed OSD functional officials responsible for managing CIM, in areas including Acquisition, Command and Control, Distribution, Environment, Finance, Health Affairs, Material Management, Procurement, and Reserve Affairs. We interviewed Defense Information Management staff responsible for overseeing CIM, as well as military service and Defense agency personnel responsible for implementing CIM. We also obtained related information from other GAO reviews.

Our work was performed in accordance with generally accepted government auditing standards, between October 1993 and April 1994, primarily at OSD offices in Washington, D.C. We did not obtain written comments on a draft of this report. However, we discussed the report's contents with senior Defense officials, including the Deputy Assistant Secretary of Defense for Information Management. We incorporated their comments as appropriate.

Defense Needs a CIM Strategic Plan

Initiatives of the complexity and magnitude of CIM cannot succeed without a well-conceived strategic plan. That plan should clearly articulate a vision, goals, responsibilities, target dates, and performance measures and describe how the initiative fits with other organizational priorities. We stated in 1991 that Defense needed to develop an overall strategy for concurrently achieving short and long term CIM goals.⁵

Other organizations have similarly reported on the critical need for clear communication of the Department's plans and directions for CIM. In its

⁵Defense ADP: Corporate Information Management Initiative Faces Significant Challenges (GAO/IMTEC-91-35, April 22, 1991).

January 28, 1993, report on CIM, the Defense Inspector General found that "the institutionalization of the CIM initiative is severely hampered by the lack of an overall CIM plan that is clearly presented to and understood by DOD managers and the subsequent inability to develop an effective consensus and support for the initiative by those same managers." In its February 3, 1994 draft report, Booz-Allen stated that efforts to improve Defense business processes were "based more on individual initiative than a deliberate, organizational approach to increasing effectiveness or reducing costs."

Defense does not yet have a comprehensive strategic plan coordinating the large number of activities directed to achieving CIM objectives. As a result, no clear or consistent understanding of CIM exists and the initiative has not been effectively implemented. Defense's approach to CIM can be found in a number of documents, including a CIM implementation plan, draft guidance on functional process improvement, and an enterprise model for defining and integrating functions. Although the documents contain several aspects of an acceptable strategic plan, including organizational structure and milestones, none represent an overall CIM strategy. They do not relate technical and management improvement efforts to each other or to other reform efforts underway throughout the Department. In addition, they do not identify goals, define responsibilities and commensurate authority, specify tasks and target dates, and establish measures to assess performance and progress.

The need for performance measures is particularly important. Defense does not know how much it has spent on CIM or the savings achieved. Funding is scattered throughout the various components involved in CIM activities, and no quantitative means exist to assess current processes or measure progress when changes are made.

Defense is not currently tracking savings derived from CIM. We reported in October 1993 on the difficulty of validating and tracking savings resulting from initiatives or from other factors such as reduced workloads and changes in force structure.⁶ However, without an assessment of costs and benefits, the large scale commitment of Defense resources to CIM is questionable. Defense officials questioned the feasibility and value of collecting cost data for all business process improvement and reengineering efforts. We believe, however, that obtaining cost information for major projects is critical; existing cost justification procedures, such as functional economic analyses, for making process and

⁶Defense Management Review (NSIAD-94-17R, October 7, 1993).

system investment decisions, combined with a post-audit of benefits obtained are important tools for determining the economic outcomes of the CIM initiative.

CIM Implementation Approach Produces Marginal Progress

Defense has made some progress under CIM, but results achieved relate principally to standardizing information systems rather than making improvements to business processes or achieving technical gains in areas such as data administration. While both are important, Defense estimated that most of the projected savings from CIM would come from reengineering processes and integrating them across functional areas. Unless Defense focuses more on reengineering concurrent with its system improvement efforts, progress toward the significant benefits and cost savings projected for CIM will not be attained.

CIM Implementation Emphasizes Selection of Migration Systems

Defense's current efforts for CIM are focused on a migration systems strategy whereby the best existing systems in each functional area are to be adapted for departmentwide use. These systems will then be used (and modified as necessary) until Defense determines what target or final systems it needs to support improved business processes. In November 1992, the Assistant Secretary of Defense for Production and Logistics issued the Logistics CIM Migration Master Plan. This plan established the selection of migration systems as a priority for the logistics business area. In October 1993, the Deputy Secretary of Defense signed a memorandum directing that migration system selection be accomplished for all CIM functions by early 1994.

Defense has stated it can achieve significant savings by eliminating thousands of existing (or legacy) systems and replacing them with standard (migration) systems. For example, in the Finance area, Defense has selected 8 migration systems and has identified 54 systems for elimination. Defense currently estimates savings of nearly \$800 million for 3 of the 8 migration systems. However, in some cases, Defense has not sufficiently analyzed whether implementing a migration system is technically feasible and cost-justified. To illustrate, the Acting Comptroller selected a Defense Logistics Agency system, the Defense Business Management System, in 1992 as the Department's cost accounting system to support the Defense Business Operations Fund, without evaluating the system's costs, benefits, and technical risks or defining all of the features needed. Subsequently, the Principal Deputy Comptroller reversed this decision and directed an evaluation of alternative systems.

More Progress Needed Toward Reengineering Defense Business Areas

Under CIM, each of the Principal Staff Assistants is responsible for overseeing business process reengineering within their respective functional areas. To maximize potential benefits, a top-down approach to CIM was recommended by the ELG with emphasis on reinventing the way the Department runs its functional areas. This approach involves steps to identify processes and needed data, reengineer processes, standardize data, develop economic analyses to justify changes to the processes, identify systems and technology requirements, and develop automated systems to support the new processes.

In February 1994, Booz-Allen reported that Defense's progress in improving its business processes has been mixed. The report characterized Defense's efforts as unfocused and bottom-up driven, as opposed to top-down, and noted that while Defense has made some improvements to its processes, most of these have "focused on local functional improvements, rather than the far-reaching change that can result in significant improvements throughout the Department."

Our evaluation of nine functional areas and activities showed that Departmentwide progress in implementing CIM has been disappointing, as figure 1 shows. For each functional area, we assessed the (1) PSA's authority and organizational effectiveness, (2) availability and quality of an implementation plan, (3) status of functional economic analyses, (4) availability and quality of performance measures, (5) status of migration systems selection and implementation, (6) status of efforts to reengineer business processes by identifying how business is done today ("as is" model) and how business can be performed better ("to be" model), (7) status of efforts to reengineer systems, both as currently used and potentially used, and (8) the availability of target systems to support reengineered processes. These are key aspects of the Department's efforts to improve its business processes, information systems, and use of technology and relate closely to the Committee's November 30, 1993, request to Defense for information on the status of CIM implementation efforts.

Making these assessments required evaluating a number of factors and projects where milestones had not been established for measuring progress. Consequently, these assessments represent our best judgment of the collective information we received in each area. We do not intend them to be precise measures, but they do represent a basic gauge of progress. See appendix II for further explanation of these assessment factors.

Figure 1: Status of CIM Implementation Within Selected Functional Areas

Functional Areas and Activities	PSA Authority/Organizational Effectiveness	Strategic Plan	Functional Economic Analyses	Performance Measures	Migration System Selection and Implementation	Business Process Reengineering (As Is/To Be Models)	Reengineered Data Systems (As Is/To Be Models)	Target Systems
Depot Maintenance	○	○	○	○	○	○/○	○/○	○
Material Management	○	○	○	○	○	○/○	○/○	○
Distribution	●	○	○	○	○	●/●	○/○	○
Procurement	○	○	○	○	○	○/○	○/○	○
Finance	●	○	○	○	○	○/○	○/○	○
Health Affairs	○	○	○	○	●	●/●	●/●	●
Command and Control	○	○	○	○	○	○/○	○/○	○
Human Resources	○	○	○	○	○	○/○	○/○	○
Reserve Components	○	○	○	○	○	○/○	○/○	○

Program Element and Status

Key:

- Substantially complete
- Underway but incomplete
- Just beginning

The areas had completed relatively few functional economic analyses and did not develop measures to assess their performance and progress in implementing changes to business processes. Some of the areas, however, had made progress in establishing organizations to oversee improvement efforts and developing plans for implementing CIM within their specific functions.

Two functional areas, Health Affairs and Distribution, had made more overall progress than others. Efforts to consolidate the health area were well underway before CIM was established, which provided some Departmentwide consensus and a foundation for change. Under CIM, Health Affairs has focused significant attention on its Coordinated Care Program, designed to improve military health services and reduce escalating costs. Defense has recognized the need for an integrated planning and management database and completed an information systems plan for this program, thereby providing a foundation for continued improvements. In the supply distribution area, responsible senior managers are directing reengineering efforts, and piloting and adopting best practices.

In addition to performing work covering key aspects described in figure 1, the functional areas have made little progress in integrating reengineering efforts. Most efforts to improve business processes have occurred in "stovepipes", that is, within functional areas with insufficient regard to their effect or relationship to other functional areas. However, the Department is developing its Enterprise Model to illustrate the interrelationships of the various functional areas and is attempting to use the model to demonstrate the importance of integration. In a February 26, 1994, letter, the Secretary of Defense also emphasized the importance of this, noting that the Department must focus on cross-functional integration if it is to make truly significant improvements.

The Defense Joint Logistics Supply Center's review of the supply item purchase process illustrates the complexity of some processes and the critical need for integration. The Center found that practices to prepare a supply contract, such as determining type and amount of items needed, fall under the Logistics CIM effort. Improving business practices performed after the supply contract is awarded is the responsibility of Procurement CIM. Improving accounting for supply contract expenditures falls under Financial CIM. However, each of these groups is basically operating independently. Each group's efforts must be carefully coordinated to not only ensure maximum gains, but also to preclude making isolated changes that may be detrimental to other functions.

Defense also has about 230 projects underway to improve business processes. These projects have generally not been coordinated with each other, according to the Booz-Allen study, and are not the broad functional area reengineering efforts planned under CIM. However, Defense reported that some of these have already yielded improved productivity. For example, Defense reported that a project at the Defense Logistics Agency to improve the management of supply items has shortened replenishment cycle time by 96 days and reduced annual overhead costs by \$100 million.

Mixed Progress in CIM Technical Initiatives

To support the goals of CIM, Defense started several technical initiatives, including the software reuse⁷ and data administration programs and the integrated computer-aided software engineering (I-CASE) acquisition.⁸ The Department believes it can save billions of dollars and improve its ability to develop and maintain high-quality software by incorporating software

⁷Software reuse is the practice of using existing software components to develop new applications.

⁸Defense has many other CIM technical initiatives ongoing, including the electronic data interchange program and the Center for Functional Process Improvement Expertise.

reuse practices into its software development efforts. Defense's goals for improving data administration include (1) improving the quality and timeliness of data and (2) encouraging data sharing, both within and outside the Department. The I-CASE acquisition—potentially costing over \$1 billion—is intended to provide standard software development tools to the Department to improve software quality and reduce the costs of developing and maintaining Defense software.

Concerning software reuse, one of Defense's major accomplishments is the development of the "DOD Software Reuse Initiative Vision and Strategy". This document, which was published in July 1992, lays out Defense's goals and strategies for changing the way the Department constructs software. However, as we reported previously, Defense must resolve significant technical, legal, and organizational issues in order to achieve the greatest benefits and savings from software reuse practices.⁹

Defense has made limited progress toward achieving the goals of the other two initiatives that we reviewed. The need to manage data as a corporate asset is essential to the success of CIM in achieving large-scale cost reductions and improved operations. However, as we previously reported, despite years of effort, Defense has not determined what data it needs to manage on a departmentwide basis.¹⁰ As a result, Defense continues to be hindered by poor data management practices that impede the exchange, integration, and comparison of data used within and outside the Department. To address these problems, the Deputy Secretary issued a memorandum in October 1993 directing Defense components and agencies to complete data standardization within 3 years.

Concerning I-CASE, we previously reported that Defense's plan to procure and install I-CASE throughout the Department is risky and premature.¹¹ Defense awarded a contract for I-CASE to Lockheed Corporation in November 1993. However, the Department subsequently canceled the contract after it determined that Lockheed's proposal did not meet the mandatory requirements of the solicitation. The Department is now evaluating the remaining bidders' proposals and plans to award a new contract within a few months.

⁹Software Reuse: Major Issues Need To Be Resolved Before Benefits Can Be Achieved (GAO/IMTEC-93-16, January 28, 1993).

¹⁰Defense IRM: Management Commitment Needed to Achieve Defense Data Administration Goals (GAO/AIMD-94-14, January 21, 1994).

¹¹Software Tools: Defense Is Not Ready to Implement I-CASE Departmentwide (GAO/IMTEC-93-27, June 9, 1993).

Executive Level Commitment, Involvement, and Authority Are Insufficient for CIM to Succeed

Our work and that of others has shown that (1) senior managers at the Office of the Secretary of Defense (OSD), military services, and Defense agencies are not uniformly committed to and supportive of CIM, (2) delegation of management authority has not been done or is unclear, and (3) resources for accomplishing tasks are divided among various activities with no central oversight or control. We reported in April 1991 that OSD needed to provide strong leadership and establish an organization with clear lines of authority and accountability for CIM to succeed.¹²

The Defense Inspector General similarly reported in January 1993 that the Department had not been able to build effective consensus and support for CIM. The Inspector General identified organizational constraints and Defense components' skepticism as major barriers to more effective implementation. Moreover, considerable skepticism about the value of CIM changes exists at Defense. Based on our discussions with Defense officials and our review of the Inspector General's report, we also found that suspicion and mistrust exist within the Department regarding CIM implementation.

Some of this is to be expected when a well-established organization with deeply entrenched values is contemplating major changes. Defense has identified cultural barriers as a major obstacle to effective CIM implementation. Unless Defense's executive-level leadership and mid-level managers take a more active and visible role, broad acceptance and understanding of CIM will not occur and cultural opposition to change will continue. Defense should also consider obtaining the views of outside experts to provide an independent assessment of how best to overcome cultural barriers.

The Assistant Secretary of Defense for C3I is responsible for implementing CIM and, as such, is responsible for overseeing and integrating business process innovation within and across functional areas. However, the Assistant Secretary for C3I is only one of several PSAs responsible for implementing CIM within their respective functional areas. Moreover, other PSAs have higher organizational precedence within the Department than the Assistant Secretary for C3I. For example, the Comptroller is responsible for implementing CIM within the financial function and is by law assigned a higher precedence than all Assistant Secretaries. Accordingly, the Assistant Secretary for C3I does not have sufficient authority to oversee and coordinate improvements in functional areas

¹²Defense ADP: Corporate Information Management Initiative Faces Significant Challenges (GAO/IMTEC-91-35, April 22, 1991).

other than Command and Control and is, therefore, unable to ensure that CIM goals will be realized.

Conditions for success are maximized when overall responsibility and authority for CIM are held by an individual capable of integrating plans and priorities across functional areas, making decisions, and accepting responsibility. This responsibility should be placed at a high enough level to have the authority to cut across organizational lines and direct others assigned from the functional areas. Layers of authority between this official and the functional PSAs should be minimized. The Booz-Allen draft report offered the Department similar advice when it noted in its recent study that a Chief Information Executive position is critical to ensuring effective management. According to the study, this official should promote departmentwide management improvements by developing a strategy for effectively integrating improvements, eliminating duplicate efforts, and reducing costs.

In addition, we have advocated the establishment of a Chief Information Officer position to help strengthen agencies' information technology management. In our January 1994 testimony before your Committee, we stated that a Chief Information Officer could (1) work with agency senior management to define strategic information management priorities and (2) support program officials in defining information needs and developing strategies, systems, and capabilities to meet those needs.¹³ This official would provide an overall view and understanding of the Department's functional areas and their interrelationships, combined with knowledge of sound information management practices. This official would work closely with senior Department leadership, including the Deputy Secretary of Defense, the military service secretaries, and the PSAs to help improve Defense's basic business planning, processes, and systems.

Conclusions

We remain very supportive of the CIM initiative, but its effective implementation is critical to Defense improving its business processes, data, and information systems. If done successfully, billions of dollars can be saved. However, after 4 years of effort, much work remains to be done toward achieving these substantial savings. Defense's approach to managing the initiative is simply not working. A strategic plan does not exist, insufficient attention is being devoted to business process reengineering, and authority and responsibilities are unclear. Further, the

¹³Improving Government: Actions Needed to Sustain and Enhance Management Reforms (GAO/T-OGC-94-1, January 27, 1994).

Department has not assessed the costs and benefits of CIM by collecting reliable cost information, performing functional economic analyses, and conducting post-audits of claimed savings. Defense is at a point where it must reassess its implementation approach. This is a large, difficult management task that will require substantial effort from within Defense and assistance from others.

Recommendations

We recommend that the Secretary of Defense:

- Ensure the expeditious development of a management strategy with well-defined roles and authorities to (1) plan and manage CIM, (2) gain the mutual commitment and support of the military services and Defense agencies to overcome cultural barriers that are deeply entrenched in some areas and in the process of changing in other areas, and (3) manage and control funds to ensure effective implementation and integration of improved business processes and systems. This should include establishing a Chief Information Officer and could involve creating a committee or board that includes the Deputy Secretary of Defense, the secretaries of the military services, the PSAs, and the Chief Information Officer.
- Seek the views of outside expert practitioners to provide independent perspectives on the CIM initiative.
- Ensure the development of a cohesive, complete strategic plan to guide CIM implementation and integration. This plan should build on the ELG's recommendations and the 1991 CIM implementation plan and clearly articulate the goals and objectives of the initiative, identify major tasks to be performed and associated resource requirements, define responsibilities and authority, and prescribe milestones for actions to be completed. The plan should also clearly describe relationships between each of the functional areas.
- Ensure an appropriate balance between departmental efforts to reengineer and integrate business processes and to standardize systems. This should be included as a key aspect of the Department's strategic CIM plan and is critical to obtaining significant, long-term operational improvements and savings, while concurrently making short-term systems improvement efforts where justified.
- Require that migration systems be supported by sound economic and technical analyses before implementation.
- Require that the costs and benefits of major process and systems improvements be assessed prior to making investment decisions and that

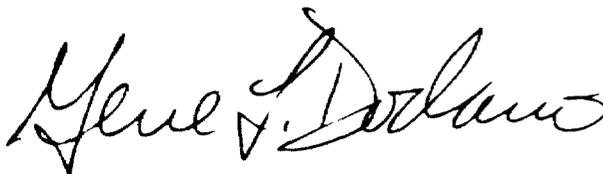
post-audits be performed to assess benefits and verify cost savings obtained.

- Direct the Principal Staff Assistants to establish plans consistent with the overall strategic plan's goals and objectives. Additionally, these plans should include performance measures to evaluate progress within their respective functional areas. These measures should be used to assess current operations and reengineered processes and identify costs and savings derived from functional improvements and new systems. A prerequisite to this is the need to systematically collect reliable cost information.

We are sending copies of this report to the Secretary of Defense; the Director of the Office of Management and Budget; and other interested parties. Copies will also be made available to others upon request.

This report was prepared under the direction of David O. Nellesmann, Director, Information Resources Management/National Security and International Affairs, who can be reached at (202) 512-6240, and Donna M. Heivilin, Director, Defense Management/NASA Issues, who can be reached at (202) 512-8412. Other major contributors are listed in appendix III.

Sincerely yours,



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Abbreviations

CIM	Corporate Information Management
CSI	Command, Control, Communications and Intelligence
DOD	Department of Defense
ELG	Executive Level Group
FEA	functional economic analysis
I-CASE	Integrated Computer-Aided Software Engineering
ITAA	Information Technology Association of America
NASA	National Aeronautics and Space Administration
OSD	Office of the Secretary of Defense
PSA	Principal Staff Assistant

Summaries of CIM Studies by Other Organizations

The Department of Defense commissioned external studies to evaluate CIM and its implementation, as well as an internal evaluation by Defense's Inspector General. Key findings and scopes of these reports are discussed below.

Information Technology Association of America (ITAA)

The ITAA reported its findings in its July 1993 report, Enterprise Integration in the Department of Defense. The study's main objectives were to determine (1) how Defense can achieve enterprise integration, that is, redesign and integrate mission activities to enhance warfighting effectiveness and reduce costs, (2) what steps should be taken to gain the commitment of Defense's senior leadership to make a change of this magnitude, and (3) what can be done to address the human consequences of downsizing and/or reengineering. The ITAA recommended that the Office of the Secretary of Defense/Deputy Secretary of Defense lead the enterprise integration effort. In addition, the ITAA recommended that a strategic enterprise integration implementation plan be designed, communicated, and implemented immediately.

The ITAA team consulted notable experts from both industry and Defense and researched other reports on enterprise integration.

George Mason University, The Institute of Public Policy

The Institute reported its findings in a November 1993 report, Functional Process Improvement Implementation: Public Sector Reengineering. The study's main goal was to identify new ideas, strategies, and tools to improve Defense's functional process improvement efforts. Its primary finding was that CIM managers are not providing enough attention to the managerial aspects of CIM. The study reported too much focus on the technical aspects of reengineering. The Institute reported that more management emphasis and commitment would be needed to change Defense's culture and reward system. The report also stated that a Departmentwide reengineering effort does not seem practical and that Defense should build on some success stories before implementing CIM throughout the agency. The George Mason University team interviewed Defense managers, reviewed reengineering and reinventing studies, and conducted two case studies.

Booz-Allen & Hamilton, Inc.

Booz-Allen reported its findings in a February 1994 draft report. The study's specific goal was to determine how Defense can implement its information management program to obtain the greatest savings.

Booz-Allen found inconsistent approaches used to estimate costs and benefits. It also found skepticism throughout the Department, few incentives for reducing costs, and a lack of clarity over authority, roles, and responsibilities.

The Booz-Allen team interviewed more than 200 individuals. In making their analyses, the team used data gathered from interviews, pertinent documentation, and their own expertise. The draft report sent to Defense for comment offers recommendations and actions for implementation, including that the newly proposed Chief Information Executive articulate a vision and guide broad management changes.

**Inspector General,
Department of Defense**

The Department of Defense's Inspector General reported its findings in a January 1993 report, Defense Corporate Information Management Initiative. The study's specific goal was to address the status of CIM's implementation plan and how Defense is doing in institutionalizing the CIM initiative. It found that the institutionalization of the CIM initiative has been hindered by the lack of an overall plan that is clearly presented to and understood by Defense managers. Further, it found savings and budgeting requirements associated with the CIM initiative are inadequately analyzed, documented, and reported. The report concluded that the Director of Defense Information had not developed and articulated a business process improvement plan and functional economic analysis for the overall CIM initiative. The Inspector General stated that the Director also needs to develop and issue formal Defense policy and guidance that requires full implementation of the CIM initiative.

Functional Area Assessment Factors

We evaluated key functional areas and activities based on critical success factors defined in Defense's guidance for implementing CIM.¹ The following section describes the factors in our assessments of the Department's progress in completing the critical success factors cited in figure 1.

PSA authority and organizational effectiveness: Defense guidance states that PSAs are to have authority and responsibility for the development of functional objectives; analysis of the processes, data, and supporting information systems required to satisfy those objectives; and implementation of process, data, and system changes to streamline operations and improve cost-effective performance.

Strategic plan: The guidance requires a plan for the functional area that identifies the function's objectives and significant actions that will be taken across the entire functional area over the 10-plus year planning horizon addressed by the functional objectives, such as implementation of Defense Management Review decisions.

Functional economic analyses (FEAS): The guidance requires that an FEA contain most of the elements of this matrix, including a summary of the strategic plan for the entire functional area and for the functional activity, performance measures, targets, data management and information system strategies for the functional activity, data and system changes needed to support the functional process improvement, and a data and system cost analysis.

Performance measures: Functions are to develop performance measures so that a quantifiable and verifiable basis will exist for assessing progress toward the functional objectives. For each performance measure, performance targets are established for the full 10-plus year planning horizon of the functional objectives.

Migration system selection and implementation: A migration system is an existing information system that has been designated as the single system to support standard processes for a functional activity.

Business process reengineering (as is/to be models): These models document how the functional activity operates now, define the baseline environment from which change proceeds, and define how the business will operate in the future.

¹Functional Process Improvement, DOD 8020.1-M (Draft), August 1992; and Change 1, January 1993; Director of Defense Information, Office of the Secretary of Defense.

Reengineered data systems (as is/to be): This analysis documents how the functional activity's data structures and rules operate now and will operate in the future when approved data and information system changes have been implemented.

Target systems: A target system is a standard system within a corporate information management functional area that has completed the transition to the DOD-wide standard technical environment and standard data definitions.

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Related GAO Reports

Financial Management: Status of the Defense Business Operations Fund
(GAO/AIMD-94-80, March 9, 1994)

Defense IRM: Management Commitment Needed to Achieve Defense Data Administration Goals (GAO/AIMD-94-14, January 21, 1994)

Defense IRM: Business Strategy Needed for Electronic Data Interchange Program (GAO/AIMD-94-17, December 9, 1993)

Defense Transportation: Commercial Practices Offer Improvement Opportunities (GAO/NSIAD-94-26, November 26, 1993)

Defense Inventory: Applying Commercial Purchasing Practices Should Help Reduce Supply Costs (GAO/NSIAD-93-112, August 6, 1993)

Software Tools: Defense Is Not Ready to Implement I-CASE Departmentwide (GAO/IMTEC-93-27, June 9, 1993)

Commercial Practices: DOD Could Save Millions by Reducing Maintenance and Repair Inventories (GAO/NSIAD-93-155, June 7, 1993)

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Organizational Culture: Techniques Companies Use to Perpetuate or Change Beliefs and Values (GAO/NSIAD-92-105, February 27, 1992)

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Defense Logistics: Observations on Private Sector Efforts to Improve Operations (GAO/NSIAD-91-210, June 13, 1991)

Defense ADP: Corporate Information Management Initiative Faces Significant Challenges (GAO/IMTEC-91-35, April 22, 1991)

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