United States General Accounting Office

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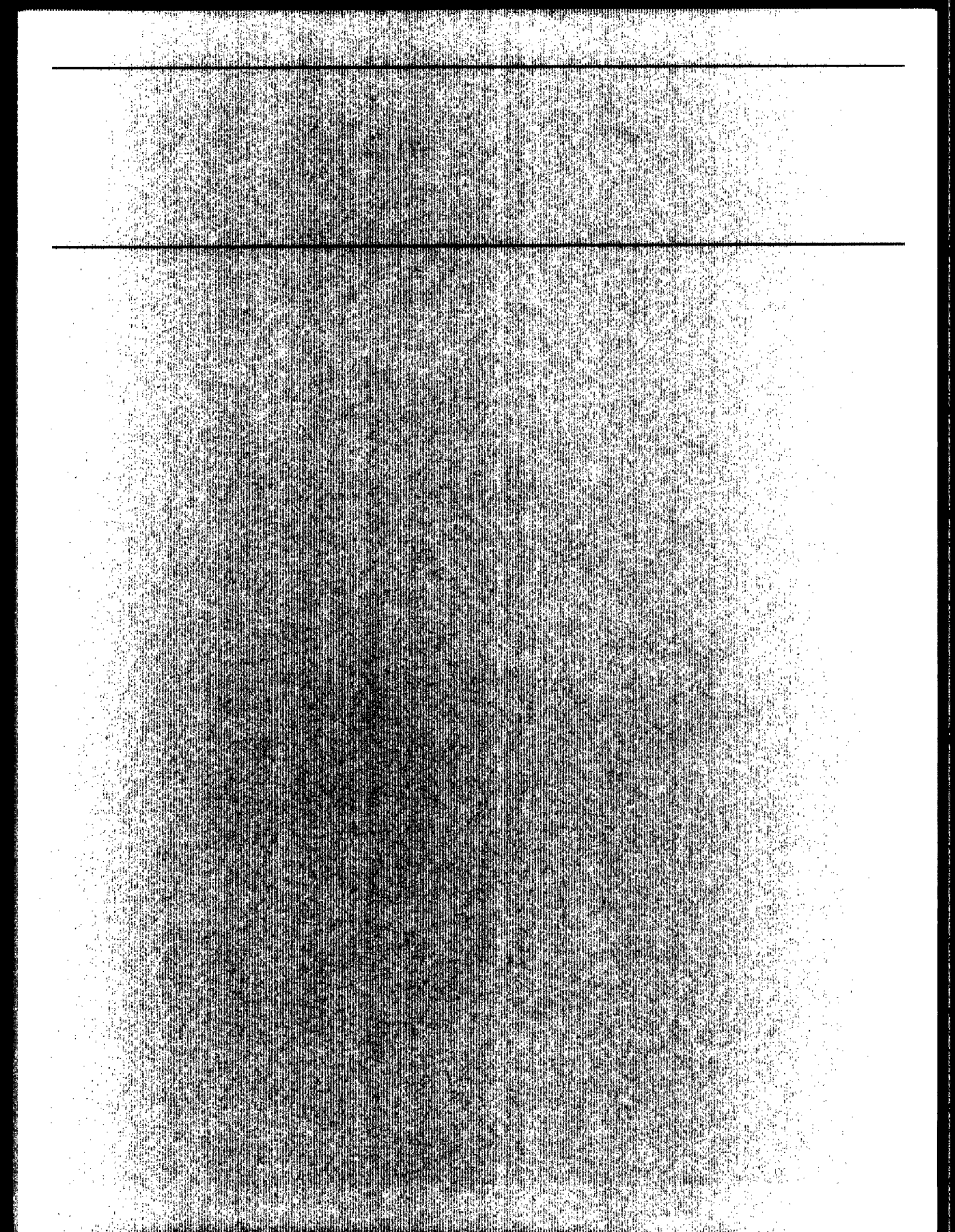
Report to the Chairman, Committee on Governmental Affairs, U.S. Senate

January 1994

DEFENSE IRM

Management Commitment Needed to Achieve Defense Data Administration Goals

GAO/AIMD-94-14



GAO

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

Accounting and Information
Management Division

B-253744

January 21, 1994

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

Dear Mr. Chairman:

The Department of Defense (DOD), faced with the challenge of maintaining a strong military with fewer resources, began its Corporate Information Management (CIM) initiative to help streamline operations and manage resources more efficiently. As you know, CIM is a top-down effort to simplify and improve functional processes by first documenting business goals, methods, and performance measures; identifying the supporting business processes and data requirements; and then evaluating and applying information technology to support the improved business processes. Defense initially estimated that implementing CIM could save the Department $36 billion by fiscal year 1997.

This report is one of several responding to your request that we review key Defense efforts supporting CIM implementation.[1] Our objective was to determine the effectiveness of the Department's efforts to implement Defense data administration. Data administration is concerned with the planning, definition, documentation, management, control, and use of data resources for the benefit of an organization as a whole. 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.

Poor data management practices impede the exchange, integration, aggregation, and comparison of data used within Defense, thereby hindering effective decision-making and increasing business costs. The need to effectively manage data as a corporate asset is therefore essential to the success of CIM in achieving large-scale cost reductions and improved operations. Appendix I details our objective, scope, and methodology.

[1]We reported on Defense's acquisition of Integrated Computer Assisted Software Engineering tools in Software Tools: Defense Is Not Ready to Implement I-CASE Departmentwide (GAO/IMTEC-93-27, June 9, 1993) and on Defense's implementation of an electronic data interchange program in Defense IRM: Business Strategy Needed for Electronic Data Interchange Program (GAO/AIMD-94-17, Dec. 9, 1993).

Results in Brief

Despite 2 years of effort, Defense has made little progress toward reaching its corporate data administration goals. Specifically, Defense has not determined what data it needs to manage on a departmentwide basis. CIM principles endorsed by the Secretary of Defense in November 1990 call for senior functional managers to first document their business requirements (that is, their business goals, methods, and performance measures) and then determine the data they need to support these requirements. These requirements have not yet been set. Further, according to Defense's Inspector General, the Department's senior functional managers are not uniformly committed to these CIM principles.[2] As a result, Defense has not been able to properly determine its corporate data needs.

Rather than document business requirements, Defense has engaged in activities that do not promote its data administration goals. Specifically, it has issued data element standardization procedures without first issuing guidance on the preliminary steps for developing data element standards (that is, developing, validating, integrating, and approving the data models from which data standards are derived).[3] This will likely result in the Department standardizing data elements that do not meet its corporate needs. In addition, Defense has developed and implemented a data dictionary system—the Defense Data Repository System (DDRS)—that cannot meet its needs.[4] This system is incapable of providing required capabilities, such as the storage of data models, and has been loaded with information of questionable quality about existing nonstandard data elements. As a result, DDRS may actually aggravate the general problem of unreliable and incompatible data.

Background

A central goal of CIM is to improve Defense operations and reduce costs through improved management of information. To help achieve CIM's goal, Defense recognizes that it must manage its data resources as corporate assets. As such, Defense wants to improve the quality, accuracy, and integrity of data used in its information systems by defining and enforcing

[2]Department of Defense Inspector General Program Evaluation of the Defense Corporate Information Management Initiative, January 28, 1993.

[3]Data models document and present a logical picture of a collection of data elements and the relationships among these data elements. According to Defense policy, approved functional area data models are the basis for the Department's data element standards.

[4]A data dictionary is a special database of information describing data elements, including their names, format, relationship, and usage.

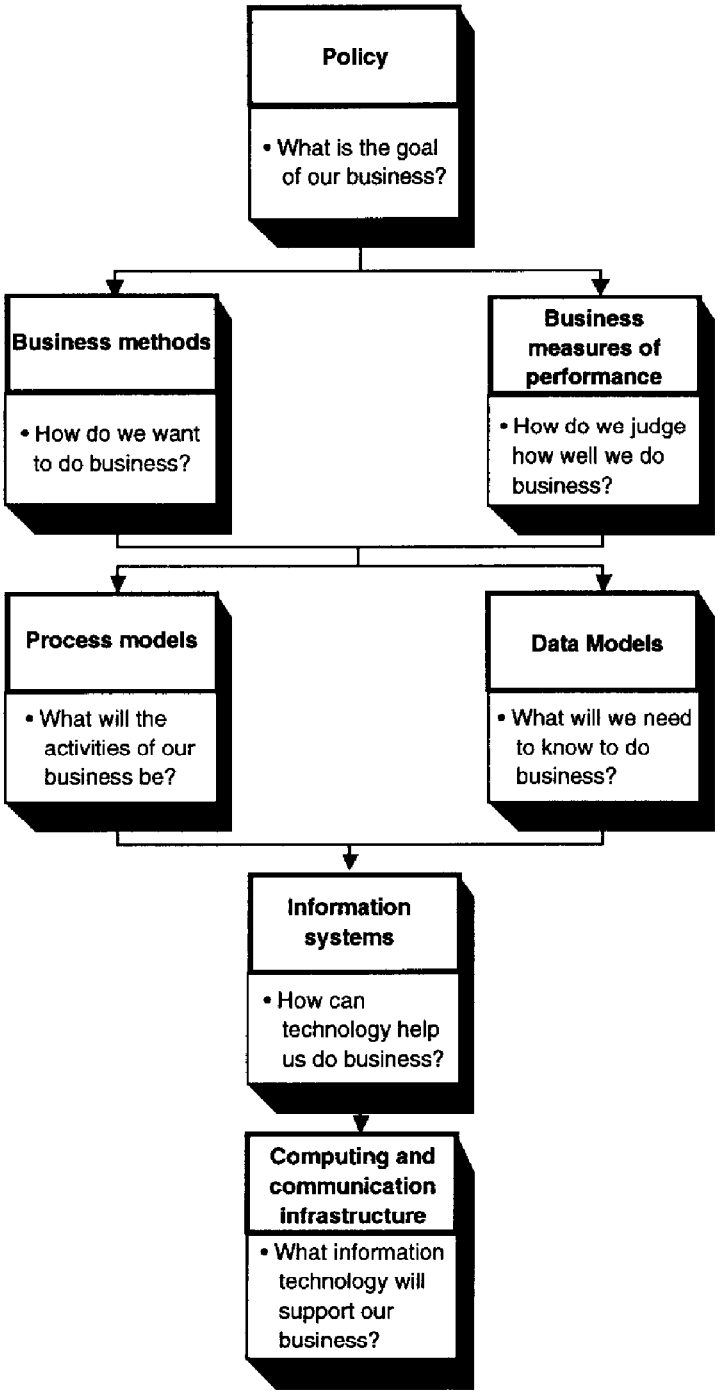
standard data elements.[5] Using standard data elements allows data values to be captured once and then shared among different Defense functions to meet corporate user needs.

In 1991 Defense reissued its data administration policy.[6] This policy set two primary goals for Defense data administration: improve the availability, accuracy, timeliness, and quality of Defense data; and structure information systems to encourage data sharing, both within and outside the Department. The policy also directly supports the CIM model, shown in figure 1. Driven by mission or policy goals, this model outlines the steps Defense managers should take to identify their business methods and performance measures, document and improve their functional process and data requirements, and implement information systems supporting their improved business practices.

[5]A data element is a basic unit of information having a unique meaning and a prescribed set of distinct values.

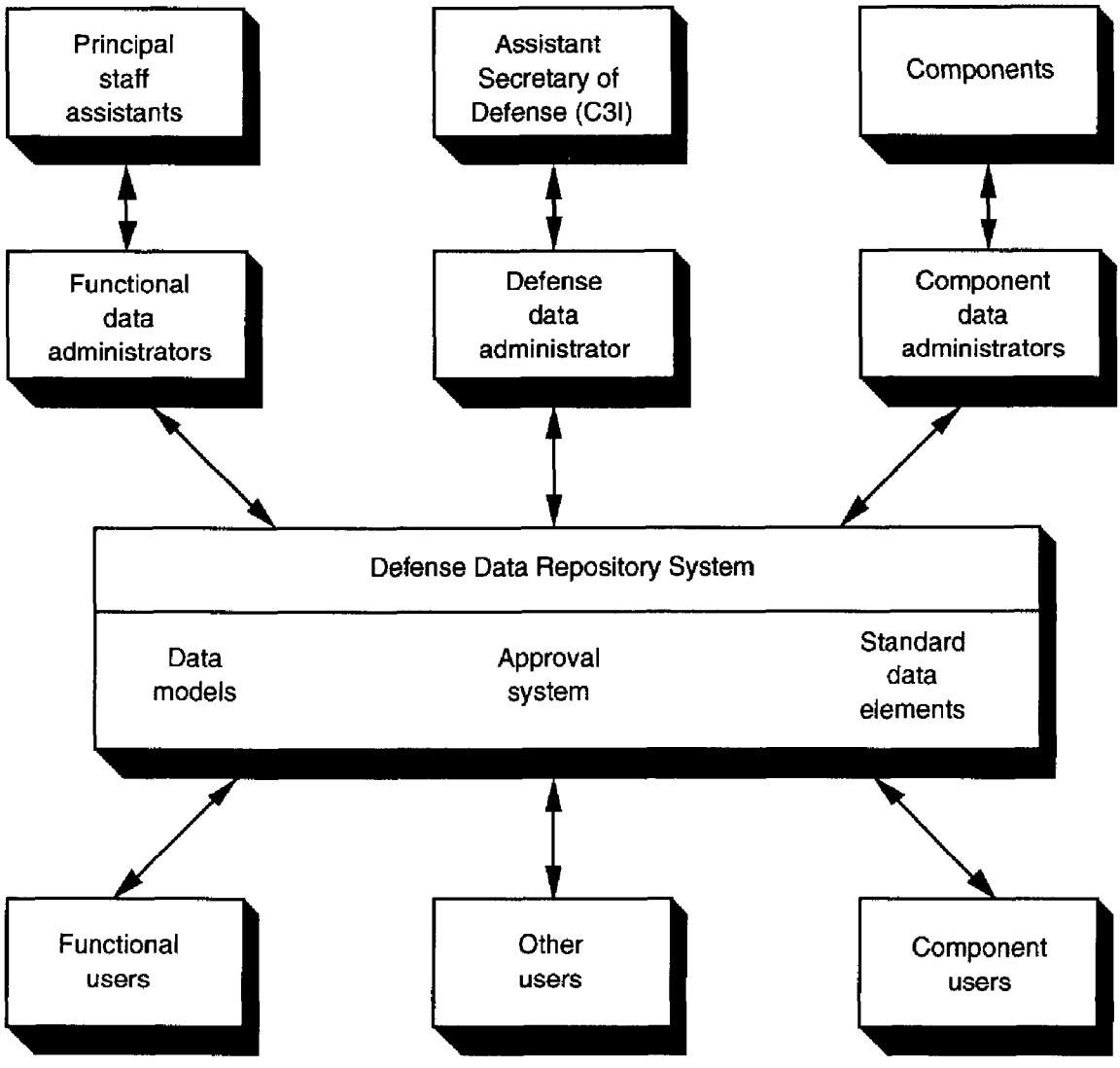
[6]DOD Directive 8320.1, "DOD Data Administration", September 26, 1991. Reissues data administration policy set forth in DOD Directive 5000.11, December 7, 1964.

Figure 1: CIM Model



To meet its goals, Defense's policy identified two data administration tools—common rules for documenting Defense functional data needs and a data dictionary system to store descriptive information about standard Defense data elements. The policy also assigned data administration responsibilities to several persons and organizations, as depicted in figure 2.

Figure 2: Defense Data Administration Framework



The Assistant Secretary of Defense for Command, Control, Communications and Intelligence (ASD/C3I) is responsible for prescribing and issuing data administration policies and procedures for use by Defense components. The Director, Defense Information Systems Agency (DISA) Center for Information Management serves as the DOD Data

Administrator, and supports the ASD/C3I in these efforts. Office of the Secretary of Defense (OSD) Principal Staff Assistants and the heads of DOD components are responsible for defining their data requirements and implementing Defense data administration within their areas of responsibility, consistent with DOD policy.

Poor Data Administration Practices Hinder Defense Information Management Capabilities

Despite almost 30 years of efforts to manage data as a corporate asset, Defense has been unable to standardize the data elements used in its information systems. Three factors contributed to the failure of past attempts at corporate data management. First, Defense's functional managers lacked an understanding of the importance of using information to manage business resources. In 1990 the Deputy Secretary established the Defense Executive Level Group to study the Department's information management practices. The group found that most Defense organizations typically did not use information to effectively control their operations and resources, but rather viewed information management as applying technology to reduce business costs.[7] Second, Defense lacked a framework for defining and integrating its data management activities departmentwide. Data management directives allowed too much flexibility in their implementation. Third, Defense lacked a common approach and methodology for identifying and describing its data requirements.

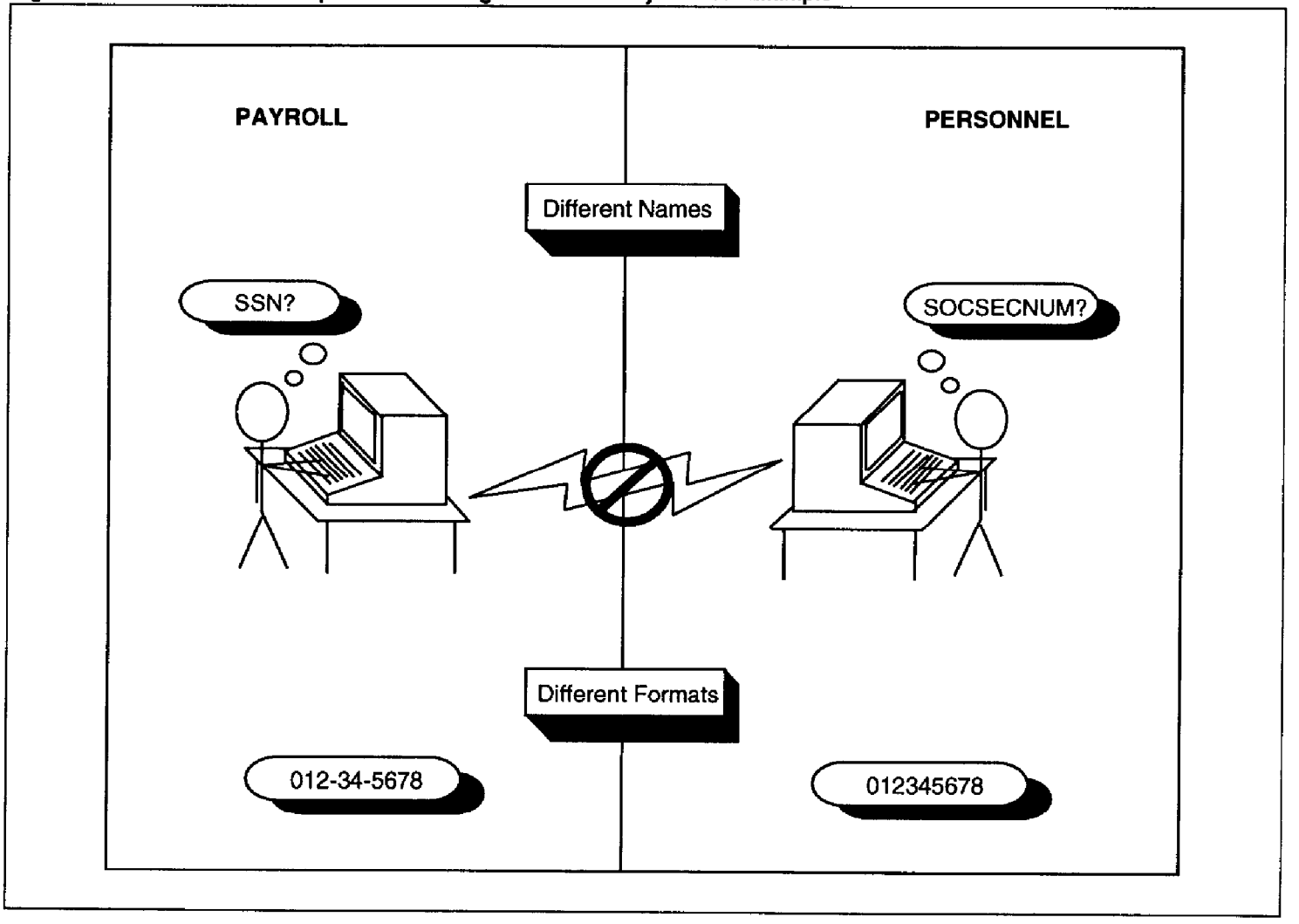
Poor data management practices contribute to inefficiencies that increase business costs and hamper the ability to communicate data across Defense information systems. As figure 3 illustrates, a data element, such as Social Security Number, cannot be easily communicated if different systems use different data element names and formats. Defense's failure to use standard data elements contributes to the chronic inability to exchange and combine critical data among its command and control, intelligence, combat support, and business information systems. Furthermore, these practices hinder the ability to make effective decisions. For example:

- A lack of data standards has forced the Assistant Secretary of Defense (Program Analysis & Evaluation) to devote staff exclusively to translating and interpreting data submitted from different organizations and assembling the data into a useful format. In one instance, two Navy reports offered different counts for the number of submarines at sea because they did not use common data elements.

[7]"A Plan for Corporate Information Management for the Department of Defense," Executive Level Group for Defense Corporate Information Management, September 11, 1990.

- Combat mission support during military operations has been delayed because of time needed to translate data among different information systems. In one case during Operation Desert Shield/Desert Storm, a central database of joint intelligence information was corrupted with large quantities of incompatible data that could not be used.

Figure 3: Nonstandard Data Impair Data Sharing: Social Security Number Example



Defense Has Not Determined Its Corporate Data Requirements

Defense has not determined what data it needs to manage on a departmentwide basis. Under the CIM model, the OSD Principal Staff Assistants—the Department's senior functional managers—should document their business goals, methods, and performance measures. This information then becomes the basis for determining the Department's corporate data needs. However, Defense has not determined what its corporate data needs are or how to manage them.

Under CIM, Defense's senior functional managers are envisioned as being responsible for providing management direction for the Department's functional business processes and operations, including those currently managed by the military departments. As such, the CIM initiative calls for these managers to serve as proponents for improving the business processes within their respective functional areas.

However, rather than viewing CIM as an opportunity to improve their business processes, some functional managers view CIM as an ASD/C3I technical initiative. This misperception is compounded by a lack of policy formalizing the senior functional managers' roles and responsibilities under CIM. As we reported last year, the Secretary of Defense needs to develop a management policy that clearly delineates how the roles and responsibilities of OSD senior functional managers should change to reflect CIM goals.[8]

In October 1992, Defense issued DOD Directive 8000.1, Defense Information Management (IM) Program, which lays out the Department's information management policy. However, while this document outlines the high-level goals of CIM, it does not establish the responsibilities, authorities, and funding controls required to implement the CIM initiative. The Department of Defense Inspector General reaffirmed this in January 1993 noting that there were no approved Defense directives or instructions providing a clear definition of the CIM initiative and defining senior functional managers' roles and responsibilities.[9]

Without a clear understanding of their roles and responsibilities, functional managers are reluctant to commit resources to Defense data administration. More importantly, without first documenting its functional

[8]Defense ADP: Corporate Information Management Must Overcome Major Problems (GAO\IMTEC-92-77, Sept. 14, 1992).

[9]Department of Defense Inspector General Program Evaluation of the Defense Corporate Information Management Initiative, January 28, 1993.

business needs, Defense cannot determine what data are needed to support the Department's mission.

Current Data Administration Activities Are Ineffective

Defense is currently engaged in several data administration activities, such as developing data element standardization procedures and operating a corporate data dictionary. However, because the Department has not yet determined its corporate data needs, such efforts are premature, ineffective, and do not promote Defense data administration goals.

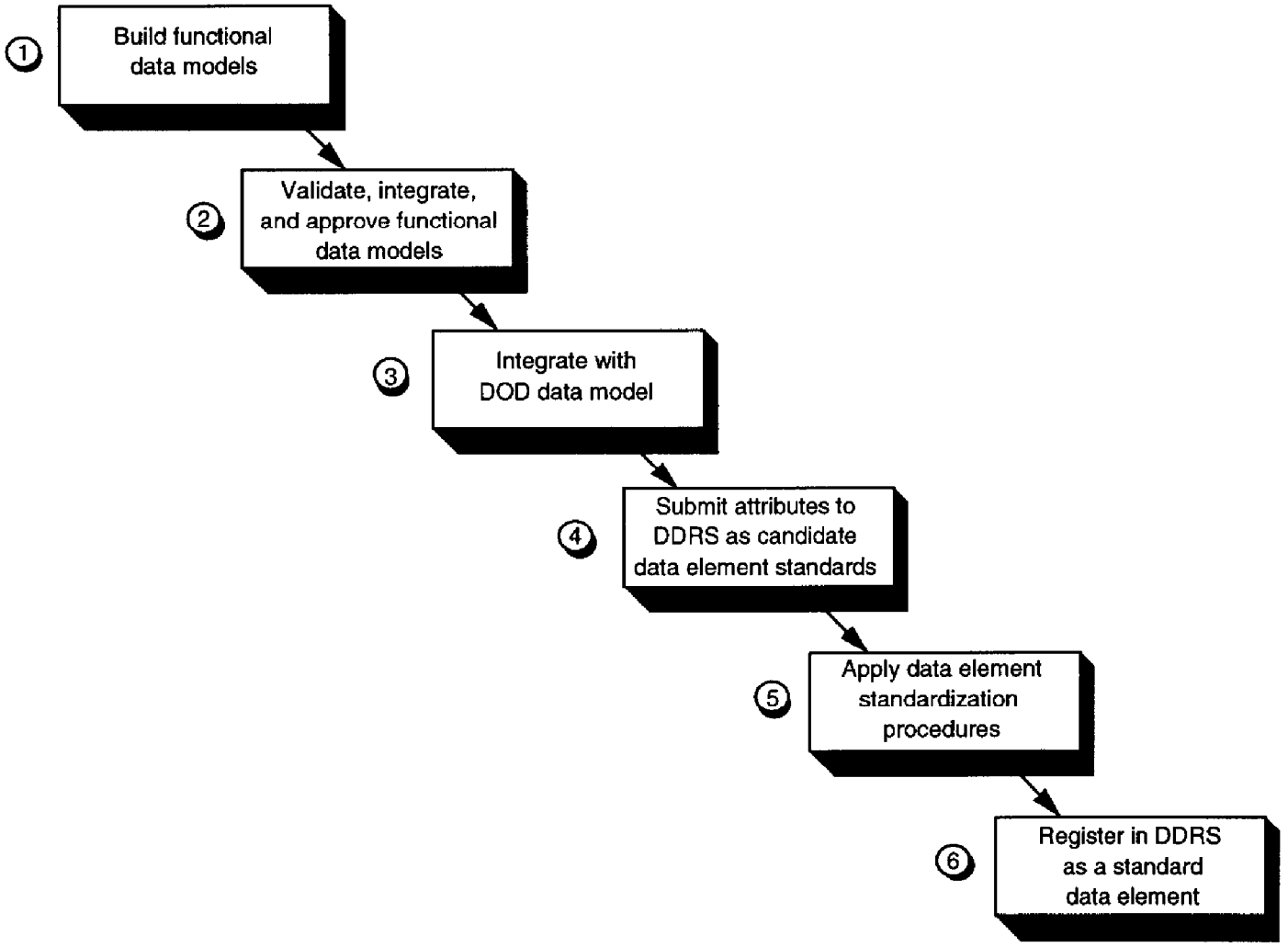
Data Element Standardization Procedures Are ineffective

Defense's data element standardization procedures, issued in January 1993, are premature. According to Defense policy, data element standards should be based on functional data models. [10] However, Defense issued its data element standardization procedures before issuing guidance for developing, validating, and approving data models. Without such data modeling guidance, attempts to apply these standardization procedures could lead to the standardization of data elements that do not meet the Department's corporate needs.

Figure 4 illustrates the data element standardization process, beginning with the development of functional data models and ending with a data element being registered as a standard in DDRS. As the figure illustrates, applying the data element standardization procedures is step five in the data element standardization process. Guidance for implementing steps one through three in the process has not been completed, however, leaving the Department without the rules and standards needed to ensure a common approach to building, integrating, and approving data models. Nevertheless, Defense components and agencies have initiated over 100 modeling efforts. Lacking a common approach, these models will differ in quality and may not be compatible. Consequently, it will be difficult, if not impossible, for Defense to consolidate and integrate these models to support the Department's data standardization requirements, as well as broader data administration goals.

[10]DOD Manual 8320.1-M-1, "Data Element Standardization Procedures," January 1993.

Figure 4: Steps in the Data Element Standardization Process



The Defense Data Repository System Does Not Support Data Administration Goals

Defense's corporate data dictionary, DDRS, has been poorly planned and implemented, and is fundamentally flawed. Contrary to the CIM model, DDRS was developed prior to determining the methods, processes, and data needed to support Defense data administration. Further, Defense has populated DDRS with inaccurate data about existing nonstandard data elements. As a result, Defense has developed and is operating a data dictionary system that does not support user needs, known data dictionary requirements, or Defense data administration goals.

Defense did not follow the CIM model to determine how DDRS would support departmentwide data administration. As noted earlier, the CIM model requires an organization to first determine its business methods, processes, and data requirements before implementing a technical solution. Because of a desire to show progress implementing data administration, Office of the Assistant Secretary of Defense/Command, Control, Communications, and Intelligence (OASD/C3I) and DISA staff did not follow these CIM principles. Instead, hoping to make a "quick-start" in implementing a data dictionary system, they developed DDRS based on the Army's data dictionary system.

However, as key component and functional data administrators told us, DDRS cannot support several functions required of a data management support environment, such as developing, integrating, and storing data models. Defense policy initially required OSD functional managers to store their data models in DDRS.[11] Because DDRS was not capable of storing these models, Defense established a second repository for that purpose and changed its policy accordingly.[12] However, this repository still does not meet Defense data administration needs because changes can be made in data models that are not reflected in the standard data elements.

Other problems with DDRS concern data quality and compatibility. To demonstrate progress implementing data administration, the OASD/C3I Director of Defense Information set a goal of loading DDRS with 20,000 data elements by the end of 1992. Defense responded by populating DDRS with 32,000 data elements from existing management information systems. The resulting system, however, does not contribute to Defense data administration goals; instead, it perpetuates existing problems. First, no effort was made to ensure the quality of the data in DDRS. Functional data administrators who provided the information about these data elements could not vouch for the quality of the information they provided. Since this information may be inaccurate, any use of it would be inadvisable. Second, these data elements were older, nonstandard data elements taken from existing management information systems. Private sector experts suggest that making nonstandard data elements available to users for continued use actually increases the problem of incompatible data elements—contrary to Defense data administration goals. Indeed, the OASD/C3I Deputy Director of Defense Information

[11]DOD Manual 8020.1-M (Draft), August 1992. Endorsed for use by the Director of Defense Information as interim Defense guidance in an OASD/C3I Memorandum dated August 5, 1992, entitled "Interim Management Guidance on Functional Process Improvement."

[12]DOD Manual 8020.1-M (Draft) Change 1, January 1993.

(Information Technology) stated that it would have been more valuable to populate DDRS with a few thousand model-derived standard data elements, rather than thousands of nonstandard data elements.

Conclusions

Defense launched the CIM initiative in an attempt to maintain or increase its military effectiveness while reducing its operational overhead. Defense recognizes that improving the quality and use of information across the Department through effective data administration practices is central to achieving the Department's CIM objectives. Yet Defense functional managers have not uniformly followed the CIM model to document their business goals, methods, and performance measures—the essential first step to accurately identifying the data they need to support their mission needs. Rather than resolving this fundamental management problem, Defense personnel are pursuing data administration activities that are wasteful, ineffective, and do not support the Department's corporate data administration goals. Unless the Department's functional managers, including the ASD/C3I, follow through on CIM implementation within their respective mission areas, Defense will not achieve its data administration goals.

Recommendations

To ensure that corporate Defense data requirements are properly identified, we recommend that the Secretary of Defense require Defense Principal Staff Assistants to document their business methods and performance measures prior to developing process and data models, in accordance with the CIM model.

Furthermore, to ensure that data administration efforts more effectively support Defense data administration goals, we recommend that the Secretary of Defense require the ASD/C3I to:

- Apply the CIM model to clearly determine the Defense data administration methods, performance measures, processes, and data needed to manage Defense's corporate data resources. The ASD/C3I should solicit active participation of Defense data administration customers—including functional managers, component data administrators, and information system developers—in determining these requirements.
- Cancel DDRS operation and support activities and take steps to acquire an information resource dictionary system based on the data administration process and data requirements identified above.

Agency Comments and Our Evaluation

In commenting on a draft of this report, the Department of Defense partially agreed with most of our findings and recommendations. However, Defense does not agree that data element standardization procedures are premature and that DOD data administration should be slowed down. Defense also disagrees that the CIM model should be followed in a top-down manner, and therefore, questions the importance of completing the model's initial steps before proceeding with data modeling and standardization. Finally, while admitting shortcomings with DDRS, Defense does not believe that DDRS activities should be canceled.

In its response, Defense infers that we wish to "slow down" DOD data administration. This inference is not correct. Rather, our recommendations are designed to eliminate Defense activities that are wasteful and ineffective, and instead apply resources to infrastructure efforts that directly support Defense's data administration goals (for example, determining the specific roles, responsibilities, and procedures for managing data as corporate Defense assets).

Concerning the CIM model, we believe that by ignoring the strategic component of the CIM model—that is, conducting process and data modeling activities without first determining business objectives, methods, and performance measures—Defense has no assurance that data elements derived from its modeling activities will ultimately meet its corporate needs. The ELG-CIM plan, as endorsed by the Secretary of Defense in 1990, clearly indicates that the CIM model should be followed from the top down. Further, a July 1993 report on Enterprise Integration in the Department of Defense prepared by the Information Technology Association of America also endorsed the need to link such improvement efforts to strategic mission objectives, observing that without such linkage an organization will be unable to trace its information requirements to its stated mission objectives. In addition, the Department's position concerning the CIM model is inconsistent with the findings of Defense's November 1993 report on business process improvement. That report identified the linkage of process improvement objectives to strategic business plans as a critical success factor for such efforts.

Regarding data element standardization procedures, while Defense recognizes the importance of data modeling to identify and document its data requirements, it has not developed and issued procedures establishing a common approach to building data models. As our report states, Defense has defined a data standardization process without first developing guidelines governing the quality and consistency of these data

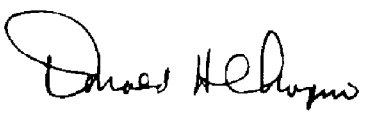
modeling inputs to that process. Without these guidelines, it will be difficult, if not impossible, to integrate the results of modeling efforts currently underway into a single DOD model, and will yield data element standards that do not meet its corporate functional requirements.

While Defense recognizes the shortcomings of DDRS, the Department believes its cancellation would remove direct operational support for data standardization, which needs to be accelerated, not decelerated. However, we believe the current DDRS is fundamentally flawed; its continued use hinders rather than aids Defense's data administration efforts. Further, canceling DDRS would not halt the Department's ability to coordinate approval of standard data elements or adversely affect CIM implementation. Other mechanisms, such as electronic mail, could be used to coordinate approval of standard data elements. Until the ASD/C3I applies and follows the CIM model to DOD data administration to properly determine its repository requirements, Defense will waste resources on a system that does not meet its needs. (See appendix II for detailed agency comments and our response.)

We conducted our review between July 1992 and November 1993, in accordance with generally accepted government auditing standards. As arranged with your office, unless you publicly announce the contents of this report earlier, we plan no further distribution until 10 days after the date of this letter. We will then send copies to the Secretary of Defense; the Director, 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. Nellemann, Director, Information Resources Management/National Security and International Affairs, who can be reached at (202) 512-2666. Other major contributors are listed in appendix III.

Sincerely yours,



Donald H. Chapin
Assistant Comptroller General

Contents

Letter 1

Appendix I Objective, Scope, and Methodology 18

Appendix II Comments From the Department of Defense 20
GAO Comments 31

Appendix III Major Contributors to This Report 37

Figures
Figure 1: CIM Model 4
Figure 2: Defense Data Administration Framework 6
Figure 3: Nonstandard Data Impair Data Sharing: Social Security Number Example 8
Figure 4: Steps in the Data Element Standardization Process 11

Abbreviations

ASD	Assistant Secretary of Defense
CIM	Corporate Information Management
C3I	Command, Control, Communications and Intelligence
DDRS	Defense Data Repository System
DISA	Defense Information Systems Agency
DOD	Department of Defense
ELG	Executive Level Group
FIPS	Federal Information Processing Standard
ITAA	Information Technology Association of America
OASD	Office of the Assistant Secretary of Defense
OSD	Office of the Secretary of Defense

Objective, Scope, and Methodology

This report responds to the May 15, 1992, request by the Chairman, Senate Committee on Governmental Affairs, that we evaluate Defense initiatives supporting CIM implementation, in particular Defense's efforts to establish a corporate data dictionary system. Because the data dictionary system must be viewed within the context of the broader Defense data administration efforts that it supports, our review focused on determining the effectiveness of the Department's efforts to implement Defense data administration.

To obtain information about the Department's strategy and progress implementing Defense data administration we

- interviewed officials and reviewed policy and planning documentation from the Office of the Director of Defense Information, Office of the Secretary of Defense, Washington, D.C.;
- interviewed officials and reviewed documentation about Defense data administration planning and procedures from the Center for Information Management, Defense Information Systems Agency, Vienna, VA; and
- interviewed officials and reviewed documentation about DDRS from the Center for Data Administration Operations, Center for Information Management, Defense Information Systems Agency, Falls Church, VA.

To gather additional information about the Department's strategy for implementing Defense data administration we

- reviewed planning documentation and interviewed functional data administrators from OSD functions, including Health Affairs, Production and Logistics, Command and Control, Force Management and Personnel, Comptroller, and Program Analysis and Evaluation; and
- reviewed planning documentation and interviewed Defense component data administrators, including Army, Navy, Air Force, Defense Logistics Agency, the Joint Staff, and the Defense Finance and Accounting Service.

Furthermore, to obtain broader knowledge of the issues and challenges associated with implementing a corporate data administration effort, we

- interviewed officials from several private sector firms, including: PHH Corporation, Hunt Valley, MD; Bank of Boston, Boston, MA; Wang Laboratories, Inc., Lowell, MA; and Narayan Associates, Winchester, MA;
- reviewed documentation describing the lessons that Electronic Data Systems Inc. learned as they implemented corporate information

management within the General Motors Corporation, which included a corporate data administration effort;

- interviewed data administration experts in academia including the Center for Information Systems Research, Massachusetts Institute of Technology, Cambridge, MA; and the Graduate School of Business, Loyola College, Baltimore, MD;
- interviewed officials from the NASA data administration program, Washington, D.C.; and
- interviewed officials and reviewed technical guidance on data administration from the National Institute of Standards and Technology, Rockville, MD.

Comments From the Department of Defense

Note: GAO comments supplementing those in the report text appear at the end of this appendix.

COMMAND, CONTROL, COMMUNICATIONS AND INTELLIGENCE

ASSISTANT SECRETARY OF DEFENSE

WASHINGTON, D.C. 20301-3040

September 27, 1993

Mr. Donald H. Chapin
Assistant Comptroller General
Accounting and Information Management Division
U.S. General Accounting Office
Washington, DC 20548

Dear Mr. Chapin:

This is the Department of Defense (DoD) response to the General Accounting Office (GAO) draft report, "CORPORATE INFORMATION MANAGEMENT: Management Commitment Needed to Achieve Data Administration Goals," dated August 19, 1993 (GAO Code 510838), OSD Case 9506. The DoD partially concurs with the report.

The Department appreciates the overall GAO support for the DoD data administration initiative, as reflected in the report. However, the Department disagrees with the GAO inference that DoD senior functional management does not support data administration. Data standardization and data management have long been important activities in the Department and the DoD data administration initiative is strongly supported. The Department also does not agree that DoD data administration should be slowed down until the Corporate Information Management initiative is better defined and supported.

The Department recognizes the shortcomings of the Defense Data Repository System (DDRS) and plans are underway to replace the existing system. The DoD does not, however, agree that the data system operation and support activities should be canceled. Cancellation would remove direct operational support for data standardization, which needs to be accelerated, not decelerated.

The DoD detailed comments on the report findings and recommendations are provided in the enclosure. The DoD appreciates the opportunity to comment on the draft report.

Sincerely,

Emmett Paige, Jr.

Enclosure

GAO DRAFT REPORT - DATED AUGUST 19, 1993
(GAO CODE 510838) OSD CASE 9506

"CORPORATE INFORMATION MANAGEMENT: MANAGEMENT COMMITMENT NEEDED TO ACHIEVE DATA ADMINISTRATION GOALS"

DEPARTMENT OF DEFENSE COMMENTS

* * * * *

FINDINGS

- FINDING A: A Central Goal of Corporate Information Management is to Improve Defense Operations and Reduce Costs through Improved Management of Information. The GAO found that, despite almost 30 years of efforts to manage data as a corporate asset, the Department of Defense has been unable to standardize the data elements used in its information systems. The GAO observed that the following three factors contributed to the failure of past attempts at corporate data management:

  - First, the DoD functional managers lacked an understanding of the importance of using information to manage business resources. The GAO noted that a Defense Executive Level Group affirmed that situation in a 1990 study of DoD management practices, finding that most DoD organizations typically did not use information to effectively control their operations and resources--but, rather, viewed information management as applying technology to reduce business costs.

  - Second, the DoD lacked a framework for defining and integrating its data management activities Department-wide. The GAO asserted that DoD data management directives allowed too much flexibility in their implementation.

  - Third, the DoD lacked a common approach and methodology for identifying and describing its data requirements.

  The GAO concluded poor data management practices within the DoD contributed to inefficiencies that increased business costs and hampered the ability to communicate data across Defense information systems. The GAO pointed out, for example, that a data element (such as a Social Security Number) cannot be easily communicated if different systems use different data element names and formats. The GAO further concluded that the DoD failure to use standard data elements contributed to the chronic inability to exchange and combine critical data among its command and control,

intelligence, combat support, and business information systems--and hindered the DoD ability to make effective decisions.

The GAO observed that to overcome those problems, in 1991, the DoD reissued its data administration policy, which set the following two primary goals for data administration:

- improve the availability, accuracy, timeliness, and quality of Defense data; and

- structure information systems to encourage data sharing, both within and outside the Department.

The GAO observed that the current policy directly supports the Corporate Information Management process model. The GAO further observed that the DoD policy assigned data administration responsibilities to several persons and organizations--(1) the Assistant Secretary of Defense (Command, Control, Communications and Intelligence) is responsible for prescribing and issuing data administration policies and procedures for use by DoD components, (2) the Director, Defense Information Systems Agency Center for Information Management serves as the DoD Data Administrator and supports the Assistant Secretary in those efforts, and (3) the Principal Staff Assistants in the Office of the Secretary of Defense and the heads of DoD components are responsible for defining their data requirements and implementing DoD data administration within their areas of responsibility, consistent with DoD policy. (pp. 4-7/GAO Draft Report)

Now on p. 7.

DOD RESPONSE: Partially concur. The DoD agrees that a central goal of Corporate Information Management is to improve Defense operations and reduce costs through improved management of information. It is appreciated that the GAO recognizes that the DoD has taken steps to improve management of information with the issuance of data administration policy in 1991.

See comment 1.

The Department does not agree with the report reference to a "Corporate Information Management process model." While there is a Corporate Information Management model in the Corporate Information Management Executive Level Group Plan (a Federal Advisory Committee, which convened in December 1989 and delivered its plan to the Deputy Secretary of Defense in September 1990), it is not a process model. The DoD does not agree with the GAO inference that the model should be followed in a step-by-step manner from the top down. The DoD rationale was clearly articulated in the DoD response to the September 1992 GAO report on Corporate Information Management (OSD Case 9235).

- **FINDING B: Defense Has Not Determined Its Corporate Data Requirements.** The GAO concluded that the DoD has not determined what data it needs to manage on a Department-wide basis. The GAO pointed out that, under the Corporate Information Management model, the Principal Staff Assistants in the Office of the Secretary of Defense--i.e., the DoD senior functional managers--should document their business goals, methods, and performance measures so the information can become the basis for determining the DoD corporate data needs. The GAO found, however, that the DoD has not been able to determine what its corporate data needs are or how to manage them--due to (1) DoD top management not having clearly defined roles and responsibilities for implementing Corporate Information Management and (2) a lack of uniform commitment on the part of senior DoD managers.

  The GAO observed that the Corporate Information Management initiative envisioned senior DoD functional managers as being responsible for providing management direction of functional business processes and operations, including those currently managed by the Military Departments. The GAO concluded that, as such, the Corporate Information Management initiative calls for the managers to serve as proponents for improving the business processes within their respective functional areas. The GAO further concluded, however, that rather than viewing the initiative as an opportunity to improve their business processes, functional managers view Corporate Information Management as a technical initiative of the Office of the Assistant Secretary of Defense for Command, Control, Communications and Intelligence. The GAO also concluded that misperception is compounded by a lack of policy formalizing the roles and responsibilities of the senior functional managers under the Corporate Information Management initiative.

  The GAO referenced its 1992 report (OSD Case 9235), in which it concluded that the Secretary of Defense needed to develop a management policy that clearly delineates how the roles and responsibilities of the senior functional managers within the Office of the Secretary of Defense should change to reflect the Corporate Information Management goals. The GAO pointed out that a January 1993 Department of Defense Inspector General Program Evaluation report reaffirmed that finding--noting that, to date, there were no approved Defense directives or instructions providing a clear definition of the Corporate Information Management initiative and defining the roles and responsibilities of Defense components. The GAO concluded that the described lack of commitment to Corporate Information Management jeopardized the success of Defense data administration. The GAO also asserted that, without a clear understanding of their roles and responsibilities,

Now on p. 9.

functional managers are reluctant to commit resources to Defense data administration, and the DoD cannot determine what data are needed to support DoD business operations without first documenting its functional business needs. (pp. 7-9/GAO Draft Report)

DOD RESPONSE: Partially concur. While it is certainly true that the DoD has not determined all its data requirements, functional managers are in the process of determining their data needs. Data standardization is not something that happens all at once, and it does not happen quickly when it is done correctly. In most cases, rather than merely documenting existing data requirements, the functional managers are choosing to apply the Corporate Information Management principles and look to improve their business processes at the same time they are documenting and validating their data requirements.

See comment 2.

The DoD strongly disagrees with the GAO statement that DoD top management does not have clearly defined roles and responsibilities for implementing Corporate Information Management. As reported by the GAO, data administration responsibilities are formally assigned in DoD Directive 8320.1, "DoD Data Administration." In addition, the publication of DoD Directive 8000.1, "Defense Information Management (IM) Program," on October 27, 1992, clearly assigns specific roles and responsibilities for Defense officials addressing the DoD information management challenges. Further, the Director of Defense Information issued interim policy and management guidance on functional process improvement in August 1992, with an update issued in January 1993, which refined roles and responsibilities of involved Defense managers. There are also a number of related information management directives, instructions, and manuals that are in various stages of coordination in the Department. Those documents continue to refine the specific roles and responsibilities, and clarify implementation issues, to ensure success of both the Corporate Information Management initiative and DoD data administration.

See comment 3.

The GAO discusses a number of observations concerning the Corporate Information Management initiative and then, based on those observations, erroneously concludes that the success of DoD data administration is jeopardized. The DoD does not agree with that conclusion, or that the GAO observations about Corporate Information Management are also true for DoD data administration. While the success of the Corporate Information Management initiative may be dependent on the success of DoD data administration, the reverse is not true. The DoD does agree, however, that data administration can be assisted by the successful implementation of Corporate Information Management. The Department would also like to emphasize that senior DoD management is fully supportive of DoD data administration.

See comment 4.

- **FINDING C: Data Element Standardization Procedures Are Ineffective.** The GAO found that the DoD data element standardization procedures, issued in January 1993, are premature--because the DoD has not yet determined its corporate data needs. The GAO observed that, according to Defense policy, data element standards should be based on functional data models; however, the GAO noted that the DoD issued its data element standardization procedures before issuing guidance for developing, validating, and approving data models. The GAO concluded that, without data modeling guidance, attempts to apply the standardization procedures could lead to the standardization of data elements that do not meet the DoD corporate needs.

  The GAO pointed out DoD policy states that data modeling should occur before data element standardization. The GAO observed, however, that applying the data element standardization procedures is step five in the data element standardization process--and that guidance for implementing steps one through three had not been completed--leaving the Department without the rules and standards needed to ensure a common approach to building, integrating, and approving data models. The GAO found that DoD components and agencies have initiated over 100 separate modeling efforts. The GAO concluded that the models will differ in quality and will not be compatible due to the lack of a common approach. The GAO further concluded that, consequently, it will be difficult and expensive, if not impossible, for Defense to consolidate and integrate the models to support the DoD data standardization requirements, as well as broader data administration goals. (pp. 9-11/GAO Draft Report)

Now on p. 10.

  DOD RESPONSE: Nonconcur. The DoD does not agree that DoD data element standardization procedures were premature because the Department has not yet determined its corporate data needs. It is necessary to publish procedures first, to enable data requirements to be identified, documented, reviewed, and standardized across the DoD. The resulting standard data is then a shared DoD resource.

See comment 5.

  The DoD also disagrees that the DoD should have published data modeling procedures before data element standardization procedures. As the data element standardization procedures were being prepared, the DoD realized that more specific guidance was needed on data modeling. A task to develop data modeling procedures was initiated and work begun. It did not make sense to stop work on the data element standardization procedures that were published in January 1993. The "DoD Data Model Development, Approval, and Maintenance Procedures" manual has been through one informal coordination and should be published in late 1993. Additionally, the GAO report does not recognize that the DoD initiated, and provided funding

See comment 6.

See comment 7.

and support to the National Institute of Standards and Technology to develop and publish a Federal Information Processing Standard on data modeling which is to be used to represent data models in a non-proprietary way. The Secretary of Commerce is expected to approve the standard by October 1993.

The GAO concluded that without data modeling guidance the models will differ in quality, will not be compatible due to the lack of a common approach, and could lead to data elements that do not meet the DoD corporate needs. The DoD "common approach" to data standardization is through the use of data models. Regardless of how they were built, data models can be used to develop well-formed, single concept data elements that meet the corporate data needs of the Department. The DoD will take advantage of all previous data modeling efforts. In fact, with the imminent publication of a Federal data model standard, more and more automated tools have become available allowing data models to be converted to that "standard" graphical representation format.

- **FINDING D: The Defense Data Repository System Does Not Support Data Administration Goals.** The GAO concluded that the DoD corporate data dictionary (the Defense Data Repository System) was poorly planned and implemented--and is fundamentally flawed. The GAO observed that, contrary to the Corporate Information Management model, the Defense Data Repository System was developed prior to determining the methods, processes, and data needed to support Defense data administration. Further, the GAO found that the DoD populated the Defense Data Repository System with inaccurate data about existing nonstandard data elements. The GAO further concluded that, as a result, the DoD developed and is operating a data dictionary system that does not support (1) user needs, (2) known data dictionary requirements, or (3) Defense data administration goals.

  The GAO asserted that the DoD did not follow the Corporate Information Management process model to determine how the Defense Data Repository System would support Department-wide data administration. The GAO found that, because of a desire to show progress in implementing data administration, the staffs of the Office of the Assistant Secretary of Defense (Command, Control, Communications and Intelligence) and the Defense Information Systems Agency did not follow the Corporate Information Management principles. The GAO observed that, instead, hoping to make a "quick-start" in implementing a data dictionary system, the DoD developed the Defense Data Repository System based on the Army data dictionary system. The GAO concluded, however, that the Defense Data Repository System cannot support several functions required of a data management

support environment--such as developing, integrating, and storing data models. The GAO further concluded that, because the Defense Data Repository System is not capable of storing data models, the DoD established a second repository for that purpose--and changed its policy accordingly. In summary, the GAO concluded the repository does not meet Defense data administration needs because changes can be made in data models that are not reflected in the standard data elements.

The GAO also found problems with the Defense Data Repository System data quality and compatibility. For example, the GAO noted that the Defense Data Repository System is populated with 32,000 data elements from existing management information systems that do not contribute to Defense data administration goals and , instead, perpetuate existing problems. First, the GAO pointed out that no effort was made to ensure the quality of the data in the repository system, and since the information may be inaccurate, any use of it would be inadvisable. Second, the GAO indicated that the data elements were older, nonstandard data elements taken from existing management information systems, which experts suggest actually increase the problem of incompatible data elements. The GAO concluded that Defense personnel are pursuing data administration activities that are (1) wasteful, (2) ineffective, and (3) do not support the DoD corporate data elements. The GAO further concluded that, unless the DoD functional managers follow through on Corporate Information Management implementation, the DoD will not achieve its data administration goals. (pp. 11-13/GAO Draft Report)

Now on p. 11.

DOD RESPONSE: Partially concur. The DoD agrees that there is a need for functional process improvement projects for data administration and repositories to determine total repository requirements. The DoD completed a functional process improvement on integrated repositories in July 1993. Additionally, a functional process improvement project on data administration was initiated in August 1993. While the DoD recognizes that the Defense Data Repository System does not support all the DoD data repository requirements, the repository was put in place to meet the majority of immediate needs until a functional process improvement could be developed to determine the total requirement. A Defense data repository steering committee has been established, which includes representatives of the different users, so that additional requirements can be identified and prioritized. Since the first discussions of establishing a Defense electronic data repository, it has been the intent of the DoD to put the repository requirements into an acquisition document so that a commercial product, or products, can be purchased once the total requirement had been determined.

See comment 8.

See comment 9.

The GAO did not recognize the lack of repository products that comply with the national Information Resource Dictionary System standard and the absence of a completed test suite to verify compliance with that standard.

See comment 10.

The DoD disagrees with the GAO conclusion data administration activities are being pursued that are wasteful, ineffective, and do not support the DoD corporate data administration goals. The GAO report infers the nonstandard data elements that have been included in the Defense repository are to be used as standards. That is not the case. The nonstandard data elements are from migration systems; that is, systems that will evolve over time as the DoD moves to revise its processes and data. Including the

See comment 11.

data elements in the repository serves two purposes: (1) it allows people involved in data modeling/standardization efforts to see how data is currently being collected in the Department so they can use the data for consideration in their data standardization work; and, (2) more importantly, including the data elements enables the development of a "mapping" to any related standard data element that is created. That is critical because the Department will transition to the use of standard, shared data over a period of several years. During that time, migration systems which still use data elements in the "old format" will have to be supported. Knowing what migration systems use what data elements and what their relationship is to "new" standard data elements is essential.

* * * * *

RECOMMENDATIONS

Now on p. 13.

- **RECOMMENDATION 1:** To ensure that corporate Defense data requirements are properly identified, the GAO recommended that the Principal Staff Assistants in the Office of the Secretary of Defense be required to document their business methods and performance measures prior to developing process and data models, in accordance with the Corporate Information Management model. (p. 14/GAO Draft Report)

See comment 12.

DOD RESPONSE: Partially concur. The DoD expects the Principal Staff Assistants in the Office of the Secretary of Defense to document their business methods and performance measures. To perform that step "prior to" developing process and data models, however, is not appropriate and is not in accordance with the Corporate Information Management model. That model is not to be implemented in a strictly top-down manner as previously articulated in the DoD response to the September 1992 GAO report on Corporate Information Management (OSD Case 9235). In fact, development of process and data models helps

determine performance measures. The model can, and should, be used in an iterative fashion, not as some "Grand Design." Nor should the model be used as a doctrine or as the exclusive method to determine data requirements.

- **RECOMMENDATION 2:** The GAO also recommended that, to ensure the data administration efforts more effectively support Defense data administration goals, the Secretary of Defense require the Assistant Secretary of Defense (Command, Control, Communications and Intelligence) to apply the Corporate Information Management model to determine clearly the Defense (1) data administration methods, (2) performance measures, (3) processes, and (4) data needed to manage DoD corporate data resources. (The GAO suggested that the Assistant Secretary of Defense (Command, Control, Communications and Intelligence) should solicit the active participation of Defense data administration customers in determining those requirements--including functional managers, component data administrators, and information system developers.) (p. 14/GAO Draft Report)

Now on p. 13.

DOD RESPONSE: Concur. Following the Corporate Information Management model a functional process improvement project for data administration already has been initiated with the active participation of functional managers, component data administrators, and information system developers. A functional process improvement project for repository management, which is a data administration activity, was completed in July 1993.

- **RECOMMENDATION 3:** The GAO further recommended that, to ensure data administration efforts more effectively support Defense data administration goals, the Secretary of Defense require the Assistant Secretary of Defense (Command, Control, Communications and Intelligence) to cancel the Defense Data Repository System operation and support activities, and take steps to acquire an information resource dictionary system based on the data administration process and data requirements identified above. (pp. 14-15/GAO Draft Report)

Now on p. 13.

DOD RESPONSE: Partially concur. As discussed in the DoD response to Finding D, the DoD is taking steps to acquire an information resource dictionary system based on identified data administration process and data requirements.

See comment 13.

However, the DoD disagrees with the GAO recommendation to cancel the Defense Data Repository System operation and support activities. The repository is satisfying the basic requirements for data administration and was built on requirements previously identified by the Army and Joint

Staff and validated by other DoD components and functional staffs. The repository is serving a very useful purpose and is facilitating the development and coordination of standard data in the Department. Canceling the repository would bring the data approval process to a halt and delay the ability of the DoD to achieve the benefits of having standard data that can be shared. It would also have an adverse effect on the DoD ability to implement the Corporate Information Management initiative.

The following are GAO's comments on the Assistant Secretary of Defense's letter dated September 27, 1993.

GAO Comments

1. The CIM model displayed in figure 1 was developed and published by the Corporate Information Management Executive Level Group's September 1990 Plan for Corporate Information Management for the Department of Defense. In his November 1990 endorsement of this plan, the Secretary of Defense stated that "the concepts set forth in the Plan shall guide the implementation of CIM principles throughout the Department."

Our position that the CIM model should be executed from the top down is supported by the logic set forth by the Executive Level Group in the CIM plan, coupled with the Secretary's endorsement of these concepts. The plan clearly states that "executing the CIM model from the top down can lead to dramatic improvement" in organizational effectiveness and efficiency. As we observed earlier, this approach is also consistent with a July 1993 report on Enterprise Integration in the Department of Defense prepared by the Information Technology Association of America (ITAA) as well as the Department's own November 1993 report on business process improvement. While conceding that top-down execution can yield dramatic operational improvements, OASD/C3I personnel continue to assert that the CIM model does not need to be implemented in a top-down manner.

2. Our position—that Defense has not formally and clearly restructured its policies in accordance with the organizational changes needed to effectively implement CIM—is based on previous work by both GAO[1] and Defense's Inspector General.[2] While Defense officials refer in their response to "interim policy and guidance," and guidance "in various stages of coordination," we reported previously that issuing interim policy guidance is not sufficient to support achievement of CIM objectives within the Department. Indeed, subsequent evaluation work conducted by the Inspector General has found the failure to formalize CIM principles through essential policy changes has impaired CIM's implementation.

We recognize that the Department has formally issued DOD Directive 8000.1, Defense Information Management (IM) Program. However,

[1](GAO\IMTEC-92-77, Sept. 14, 1992).

[2]Department of Defense Inspector General Program Evaluation of the Defense Corporate Information Management Initiative, January 28, 1993.

publication of that directive has not clarified CIM implementation roles and responsibilities or strengthened management commitment to CIM. The Inspector General found that language used in the directive permitted conflicting interpretation. Further, the ITAA Enterprise Integration Working Group reported in July 1993 that personnel whom they interviewed in the Department were, as a group, confused about CIM. According to ITAA, this confusion reflected a lack of meaningful senior management support for CIM, an absence of functional ownership of the CIM initiative, and inadequate communication within the Department surrounding CIM implementation efforts.

In addition, while Defense policy assigns data administration responsibilities, these responsibilities have not been substantively defined. For example, DOD Directive 8320.1 states that data administration procedures "shall describe the detailed administrative relationships among the DOD data administrator, the Functional Data Administrators, the Component Data Administrators, and the users of data." The directive also states that functional data administrators will implement data administration in accordance with DOD data administration procedures, and that component data administrators will manage component data administration in accordance with DOD data administration procedures. However, the DOD data administration procedures that the directive refers to have not been approved and published.

3. Despite Defense assertions to the contrary, CIM is critical to the success of the data administration program. As stated in the report, past Defense data administration efforts failed in part because functional managers did not understand the importance of using information to manage their business resources. By directly linking the business requirements of Defense organizations with the data needed to fulfill those requirements, CIM establishes the business value of data administration activities. Therefore, functional management commitment to CIM is essential to the success of Defense data administration. As stated in the report, commitment to the CIM model is essential in order to both properly determine the data needed to manage the Department as well as to commit the resources needed to manage these data as corporate assets.

4. Until Defense has formally defined the concept of operations and procedures needed for managing data as a corporate Defense asset, the fact that senior managers are "fully supportive" of data administration will not result in improved Defense operations. In its October 1992 CIM Status Report, Defense stated that "the role of the functionals in data

administration is a new requirement and there has been difficulty in identifying resources to perform the required tasks"—tasks that, as we stated previously, have not been formally defined.

Further, according to a September 1992 Navy survey of Defense data administration, the four most frequently identified problems facing data administration were (1) lack of funding, (2) lack of training, (3) lack of management support and understanding of data administration's role, and (4) a lack of manpower.[3] As summarized by one survey respondent, "for management at all levels, budget reductions will force trimming any functions which lack both 'face validity' (a purpose obvious to any observer) and a history of concrete contribution to the gut functions of the organization. Data administration has neither at the moment."

5. In its nonconcurrence, Defense states that it is necessary to identify, document, review, and standardize data requirements across DOD. We fully agree. As outlined in our report, the Department is using data modeling to identify and document its data requirements. Our concern is that developing procedures for standardizing data elements before developing uniform procedures for data modeling (that is, the procedures governing the quality and consistency of the inputs to the data standardization process) is premature and ineffective.

Further, Defense's statement that it realized the need to publish more detailed data modeling guidelines as it was developing its data standardization procedures illustrates the need to develop modeling guidelines first. The DOD data administration directive published in September 1991 recognized that procedures were needed for a number of data administration activities, including data modeling and data standardization. Despite the recognized importance of using data modeling to determine data requirements prior to standardizing data elements (as illustrated in figure 4), Defense focused its immediate efforts on data standardization procedures.

6. We recognize that Defense has provided funding to the National Institute of Standards and Technology to develop and publish a Federal Information Processing Standard (FIPS) that governs the external representation of data models. We do not address this issue in the report, however, because our concern is not with a model's representation, but,

[3]A Survey of Data Administration in DOD, Naval Information Systems Management Center, Washington D.C., September 23, 1992.

rather, with potentially uneven quality and consistency of a model's content.

7. In its response, Defense contends that it does not matter how data models are built, asserting that mandating a common format for presenting models is sufficient to ensure quality and consistency. However, repository management documentation provided by Defense explicitly states that standard methodologies for developing, as well as presenting, data models must be adopted to facilitate data model integration and information sharing. This documentation further states that both methodologies are critical to the success of Defense data administration. In addition, several members of the Defense data administration community have stated that simply mandating a common representation scheme for data models is not sufficient. The Department must provide guidelines outlining a common approach, specificity, etc., for developing data models. Defense has yet to develop and formalize data model development, approval, and integration procedures that address these important points.

8. While Defense agrees that functional process improvement projects must be completed to determine its repository system requirements, the functional process improvement for integrated repositories that Defense describes is inadequate for the purposes cited. The data administration component of this study was limited solely to the activities and data needed to support data standardization; data standardization, however, is only a subset of Defense data administration. Defense has not defined the roles, activities, and data needed to support the other data administration functions such as planning, analysis, documentation, control, and use of data resources. Without first following the CIM model to determine what activities and data are needed to manage data across the Department, it is unlikely that any other repository acquisition effort will be more responsive to Defense's needs.

Defense also notes that it began a functional process improvement effort for data administration in August 1993. While it is premature for us to comment on the effort, we continue to believe that any efforts to acquire a repository capability to support Defense data administration should be held in abeyance until the ASD/C3I has determined all of the Department's data administration requirements.

Further, Defense has no evidence to support its assertion that DDRS meets "the majority of immediate needs." The DDRS statement of work explicitly

describes building a data dictionary system to support the process defined in Army Regulation 25-9. While DDRS may support Army requirements, it does not support corporate Defense requirements, because these requirements have not been determined.

9. Defense observes that there is a lack of repository products that comform to the national Information Resource Dictionary System standard, FIPS 156, published by the National Institute of Standards and Technology. Defense Directive 8320.1 authorizes Defense to establish a repository capability that conforms to the FIPS 156 standard for implementing a data dictionary. DDRS does not comply with this standard. However, we chose not to focus on this issue in our report. Instead, we focused on more substantive issues concerning the Department's development and implementation of DDRS before determining the data administration processes and data needs that the system must support.

10. While disagreeing with our position that its data administration activities are wasteful, ineffective, and do not support their corporate goals, Defense offers no evidence to refute this conclusion. Contrary to Defense's statement, we do not state that "the nonstandard data elements that have been put into the Defense repository are to be used as standards." We simply state that, according to data management experts, making nonstandard data elements available to users risks perpetuating their continued use.

11. Defense states that DDRS permits users to review existing nonstandard data elements to see how data are currently collected and to identify and map these elements to related standard data elements when they exist. We disagree with this position regarding DDRS usefulness for three reasons.

The first, and most important, reason concerns basic DDRS data quality. Defense repository management documentation describing critical success factors for data administration states that information provided to users by a repository must be accurate and reliable. As stated in our report, this is not the case with DDRS; functional data administrators who provided tens of thousands of data elements to DDRS were unable or unwilling to vouch for the accuracy and reliability of information they submitted.

Second, comparing and mapping data elements should be based on data models, not simply on data element descriptions, because models ensure the accuracy of the analysis and validity of the item that is being mapped.

For instance, Defense Finance and Accounting Service personnel cited BALANCE AMOUNT—a data element in one finance system—as an example and told us that looking solely at this data element's name and definition would not tell an analyst that the element referred to a deposit to the Civil Service Retirement System. Only by seeing the data element in its model would that relationship, context, and use become evident to an analyst. Because DDRS lacks the ability to store data models, it cannot support accurate determination of the relationships between migration system data elements and "new" standard data elements.

Third, Defense users are actually denied access to system capabilities that are needed to perform the suggested data searches and mappings. Specifically, DISA personnel told us that functional data administration personnel are to perform the analysis and mapping of existing nonstandard data elements. However, in order to maintain DDRS system performance levels, these same personnel are denied access by DISA to the underlying database management system features that they need to conduct such analyses.

12. As stated in comment 1, we believe that the CIM model must be executed from the top down. If the strategic segment of this model is not completed, Defense has no assurance that any functional processes being "improved" under CIM support actual, current Defense business needs.

13. As we stated in comment 8, it is unlikely that any repository system will meet Defense's data administration needs until the ASD/C3I determines, using the CIM model, what activities and data are needed. Moreover, Defense's statement that it is "taking steps" to acquire a repository system "based on identified data administration process and data requirements" is disconcerting in that Defense has yet to determine these requirements.

As stated in our report, Defense developed DDRS without first determining the procedural requirements, necessary for Defense data administration, that DDRS should support. Without these requirements, Defense is operating a dictionary system that does not meet its needs. Thus, canceling DDRS would not halt the Department's ability to coordinate approval of standard data elements or adversely affect CIM implementation. Other mechanisms, such as electronic mail, could be used to coordinate approval of standard data elements. Indeed, canceling DDRS would free resources that could then be used more productively elsewhere. Defense estimated fiscal year 1993 DDRS operations and support costs to be $1.2 million.

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