Audit Report

OFFICE OF THE INSPECTOR GENERAL

DEPARTMENT OF DEFENSE INTELLIGENCE INFORMATION SYSTEM

Report No. 95-032 November 17, 1994

Department of Defense

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Acronyms

CIO	Central Imagery Office
DMA	Defense Mapping Agency
DMB	DoDIIS Management Board
DoDIIS	Department of Defense Intelligence Information System
FEA	Functional Economic Analysis
GDIP	General Defense Intelligence Program
ISB	Intelligence Systems Board
MCEB	Military Communications-Electronics Board
TIARA	Tactical Intelligence and Related Activities

INSPECTOR GENERAL
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November 17, 1994

MEMORANDUM FOR ASSISTANT SECRETARY OF DEFENSE (COMMAND, CONTROL, COMMUNICATIONS, AND INTELLIGENCE)

SUBJECT: Audit Report on the Department of Defense Intelligence Information System (Report No. 95-032)

We are providing this final report for your information and use. The report discusses the Department of Defense Intelligence Information System migration effort and the goals of improving the flow of intelligence information at a significantly reduced cost. Comments on a draft of this report were considered in preparing this final report.

Your responses to the draft of this report conformed to the requirements of DoD Directive 7650.3, and there are no unresolved issues. Therefore, no additional comments are required.

The courtesies extended to the audit staff are appreciated. If you have any questions on this audit, please contact Mr. Harrell Spoons, Audit Program Director, at (703) 604-9574 (DSN 664-9574) or Mr. Wayne Winkler, Audit Project Manager, at (703) 604-9582 (DSN 664-9582). The distribution of this report is listed in Appendix F. The audit team members are listed inside the back cover.

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Assistant Inspector General
for Auditing

Office of the Inspector General, DoD

Report No. 95-032
Project No. 4RF-0019

November 17, 1994

DEPARTMENT OF DEFENSE INTELLIGENCE INFORMATION SYSTEM

EXECUTIVE SUMMARY

Introduction. The Department of Defense Intelligence Information System (DoDIIS) is designed as a globally distributed network of independent but interoperating intelligence information and special processing systems. The DoD spends more than $1.5 billion a year on about 300 DoD intelligence information systems that process and disseminate information critical to the national defense and to support the warfighter.

Objectives. The objectives of the audit were to determine whether the systems that comprise the DoDIIS are interoperable and whether oversight of acquisition management is adequate to assure that the development and procurement of DoDIIS components support the attainment of a seamless command, control, communications, computers, and intelligence architecture. The audit also determined whether the roles and responsibilities of the DoD intelligence community have been adequately defined with respect to management of national and tactical DoDIIS resources and data element standardization.

Audit Results. Interoperability, connectivity, and a seamless architecture, the goals of the DoDIIS migration effort, will provide a much improved flow of intelligence information at a significantly reduced cost. The intelligence organizations made progress toward achieving the goals within a relatively short time period. However, achievement of those goals has been impeded. As a result, at least 22 intelligence systems have been excluded from DoD's migration review process and there is no assurance that a cost-effective, fully interoperable intelligence information system will be built. Details are in the finding in Part II.

Internal Controls. The U.S. European Command Joint Analysis Center, the Central Imagery Office, and a component of the National Reconnaissance Office have not implemented the DoD Internal Management Control Program. Also, the Defense Mapping Agency significantly underestimated expenses related to its automated information systems in the preparation of risk assessments. Management officials at each of the organizations assured the auditors that they would take prompt action to correct the deficiencies.

The audit identified material internal control weaknesses related to establishing responsibility in the DoD intelligence community for the selection of migration systems, identifying the universe of DoD intelligence information systems, and completing the economic analysis needed for adequate acquisition planning. The internal controls assessed are described in Part I, and the weaknesses are discussed in the Finding.

Potential Benefits of Audit. Implementation of the recommendations will result in improved automated information system interoperability, improved productivity, a more effective procurement process for automated information systems, and improved internal controls. Potential monetary benefits to be realized from implementing the recommendations were undeterminable (see Appendix D).

Summary of Recommendations. We recommend that the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) clarify the roles and responsibilities of specific advisory boards with respect to the migration effort, establish a top-level architecture between the intelligence and command and control communities, obtain an all-inclusive universe of intelligence systems, perform a functional economic analysis when selecting each migration system, and provide adequate time frames for the community to accomplish the above tasks.

Management Comments. The Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) concurred with the finding and recommendations. The complete text of the comments is in Part IV of the report.

Unsolicited Comments. The Director, Central Imagery Office; the Acting Comptroller, Defense Mapping Agency; and the National Reconnaissance Office provided unsolicited comments on the draft report that we considered in preparing the final report.

Audit Response. Since comments conformed to requirements of DoD Directive 7650.3, no further comments are required.

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Part I - Introduction

Background

In October 1989, the Deputy Secretary of Defense prescribed the Corporate Information Management initiative (the initiative) as the mechanism that provides the methods and tools for a major reengineering and restructuring of how the DoD executes its business methods and administrative processes. In 1993, the initiative expanded from an initial concentration on improving information management in selected administrative areas to all DoD functional areas, including command and control and intelligence. The initiative requires designated officials to select the best of the existing information systems to provide cross-functional standardization. Those selected systems are the migration systems. A migration system is an existing automated information system or a planned and approved system, officially designated as the single system to support standard processes for a function. Systems not chosen as migration systems are considered legacy systems. The legacy systems will be eliminated, so that all future system development resources can be applied to migration systems.

DoD Directive 4630.5, "Compatibility, Interoperability, and Integration of Command, Control, Communications, and Intelligence Systems," November 12, 1992, directs that forces for joint and combined (forces of two or more allies) operations must be supported through compatible, interoperable, and integrated command, control, communications, and intelligence systems that can support operations worldwide during the entire spectrum of a conflict. Joint Chiefs of Staff Publication 1-02 defines the Department of Defense Intelligence Information System (DoDIIS) as:

> . . . the aggregation of DoD personnel, procedures, equipment, computer programs, and supporting communications that support the timely and comprehensive preparation and presentation of intelligence and intelligence information to military commanders and national-level decision-makers.

According to that definition, the DoDIIS encompasses systems funded by the Tactical Intelligence and Related Activities (TIARA), the General Defense Intelligence Program (GDIP), the National Reconnaissance Program, the Consolidated Cryptologic Program, and the Tactical Cryptologic Program.

To accelerate the Corporate Information Management process, the Deputy Secretary of Defense directed that the selection of all migratory systems throughout DoD be accomplished by mid-April 1994. The Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) is responsible for establishing the procedures to be used in selecting migratory intelligence systems. The primary goals in transitioning to migration systems are to contain the functional costs of performing the DoD mission within a constrained budget while assuring commonality and interoperability of the migration systems.

To accomplish the goals of the migration effort, each Military Department and Defense agency was responsible for identifying the legacy systems within their respective areas of responsibility, assessing the level of duplication, and nominating systems for migration.

Senior officials in the intelligence community estimated that they spent about $1.5 billion in FY 1994 funds, provided through multiple intelligence programs, on the systems that comprise the DoDIIS. Of the 273 systems, within the intelligence community as of the time of the audit, 225 are legacy systems and 48 are migration systems. Additional information on the systems is in Appendix A.

Objectives

The audit objectives were to determine whether the systems that comprise the DoDIIS are interoperable and whether oversight of acquisition management is adequate to assure that the development and procurement of DoDIIS systems support the attainment of a seamless command, control, communications, computers, and intelligence architecture. The audit also determined whether the roles and responsibilities of the DoD intelligence community have been adequately defined with respect to management of national and tactical DoDIIS resources and data element standardization.

Scope and Methodology

Identification of the DoDIIS Universe. The audit reviewed the records of the DoDIIS Management Board (DMB)[1] that pertain to the identification of systems and applications in the DoDIIS. The audit verified systems comprising the DoDIIS universe in visits to the sponsoring organizations. Also, the audit reviewed the Intelligence Systems Board (ISB)[2] FY 1994 documentation relating to the identification of intelligence migration systems. We visited DoDIIS program management offices, the three Military Departments' intelligence focal points, six Defense agencies or offices with intelligence missions, and three unified commands and four of their subordinate activities to identify the process for the selection and nomination of migratory intelligence systems.

Development of Funding Estimates. The audit reviewed FY 1994 and FY 1995 congressional budget submissions and program data for intelligence systems that are funded by the TIARA, the GDIP, the National Reconnaissance Program, the Consolidated Cryptologic Program, and the Tactical Cryptologic Program. The audit also reviewed candidate migration and legacy systems and

[1]The Director, Defense Intelligence Agency, established the DMB.
[2]The ISB is a DoD/Director of Central Intelligence sponsored board.

compared that data with the developmental systems identified in the congressional budget submissions. The operation and maintenance budgets for fielded intelligence information systems were not readily available because as systems transition from development to operational status, the associated operation and maintenance costs are incorporated into a consolidated baseline budget figure. Accordingly, the operation and maintenance funding for most operational systems is not separately identified. DoDIIS systems under development are separately identified and tracked within various congressional budget submissions for intelligence programs.

Audit Period, Locations, and Standards. We made this program audit from December 1993 to June 1994 in accordance with auditing standards issued by the Comptroller General of the United States, as implemented by the Inspector General, DoD. Accordingly, we included such tests of internal controls as were considered necessary. We did not rely on computer-processed data to achieve the audit objectives and did not use statistical sampling procedures. The organizations visited or contacted are listed in Appendix E.

Internal Controls

Internal Controls Reviewed. The audit reviewed implementation of the DoD Internal Management Control Program within the intelligence function for each organization we visited. Also, we evaluated the process used by the audited organizations to identify and report intelligence automated information systems to the ISB.

Adequacy of Internal Controls. The U.S. European Command's Joint Analysis Center, the Central Imagery Office (CIO), and a component of the National Reconnaissance Office had not established internal management control programs. Also, the Defense Mapping Agency substantially underestimated systems support costs, and therefore risk, in the preparation of its vulnerability assessment. Those material internal control weaknesses are discussed in Other Matters of Interest later in this report.

Internal controls were not effective in establishing management roles and responsibilities related to the selection of migration systems, in identifying the universe of intelligence information systems, and in performing economic analyses in the selection of migration and legacy systems. Those weaknesses are material internal control weaknesses as defined by DoD Directive 5010.38, "Internal Management Control Program," April 14, 1987. Implementation of all the recommendations in this report will correct the internal control weaknesses. Monetary benefits that could result from Recommendation 4. were not quantifiable (see Appendix D). A copy of this report will be provided to the senior official responsible for internal controls in the Defense agencies and the U.S. European Command.

Prior Audits and Other Reviews

General Accounting Office Report No. 94-101 (Office of the Secretary of Defense Case No. 8677), "Defense Management, Stronger Support Needed for Corporate Information Management Initiative to Succeed," April 1994, recommends that the Secretary of Defense ensure the development of a cohesive and complete strategic plan to guide Corporate Information Management implementation and integration. The report also recommends that migration systems be supported by sound economic analysis. Management was not requested to nor did it provide comments. Our current audit made similar conclusions regarding intelligence information systems.

Inspector General, DoD, Inspection Report No. 91-INS-06, "Defense Intelligence Agency," April 5, 1991, showed that the DoDIIS functional manager did not have the authority to prevent redundant systems funded by separate intelligence programs. The report recommends that the Defense Intelligence Agency, in conjunction with the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) and the Military Departments, strengthen the authority of the DoDIIS functional manager. The Defense Intelligence Agency concurred with the recommendation.

Other Matters of Interest

Data Standards to Improve Interoperability. Establishing standards for data elements will provide the means for data sharing, controlling redundancy, and reducing the cost and time needed to transform, translate, or research the meaning of differently named but otherwise identical data elements. Standardization is a prerequisite to improved interoperability and data exchange among information systems and is accomplished by documenting, reviewing, and approving unique names, definitions, and representations of data elements.

The Deputy Secretary of Defense established a goal of completed data standardization by October 1996. The lack of data standardization is a potential impediment to the timely accomplishment of the goals of the DoDIIS migration effort. However, Rapid Data Standardization Guidance, in an attachment to a May 23, 1994, memorandum from the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence), provides the framework for accelerated standardization. Successful implementation of the Rapid Data Standardization Guidance should achieve data standardization within the prescribed time frame.

DoD Internal Management Control Program. The Joint Analysis Center, U.S. European Command; the Central Imagery Office; and a component of the National Reconnaissance Office had not established an internal management control program as of June 1994. Also, the audit questioned the utility of the Defense Mapping Agency's FY 1994 vulnerability assessment because the Agency had underestimated systems support costs by $112 million. Defense

Mapping Agency officials agreed to establish a "Technology and Information" assessable unit to include the underestimated system support cost identified by the audit. Management officials at each of the organizations assured the auditors that prompt action would be taken to correct the deficiencies. Accordingly, the report makes no recommendations for corrective action.

Part II - Finding and Recommendations

DoDIIS Migration Efforts

The DoDIIS migration effort for DoD intelligence systems may not achieve the Corporate Information Management goals of interoperability and reduced cost. The goals may not be attained because the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) has not:

o clearly defined the roles and responsibilities for oversight of system development and migration within the intelligence community,

o developed a comprehensive architecture to link the DoDIIS to the command and control systems,

o identified the complete universe of intelligence migration and legacy systems,

o used functional economic analyses in choosing intelligence migration systems, and

o has not provided sufficient time to identify intelligence migration systems.

As a result, the DoD intelligence community has excluded at least 22 intelligence systems from the migration review process and has no assurance that a cost-effective, fully interoperable intelligence information system will be built.

Roles and Responsibilities

Intelligence Systems Board (ISB). In November 1993, the Deputy Assistant Secretary of Defense (Intelligence) and the Director of the Community Management Staff formed the ISB to improve interoperability and compatibility of intelligence systems within the DoD intelligence community. As of June 1994, the Board sponsors had not formalized the charter for the ISB; however, the FY 1994 Congressional Budget Justification Book states that the ISB is tasked to review issues of interoperability and compatibility in proposed and continuing development of intelligence systems. The ISB is to advise the Director of Central Intelligence and the Deputy Secretary of Defense on policy and requirements matters pertaining to the design of information architectures as well as the design, development, and operation of intelligence systems implementing those architectures within the DoD and other organizations comprising the National Foreign Intelligence Program. An Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) memorandum, dated December 20, 1993, tasked the ISB to evaluate, consolidate, and integrate input for migratory and legacy intelligence systems submitted by the Military Departments and the Defense agencies.

In response to its tasking, the ISB has been coordinating the intelligence community responses on the migration systems. However, the DoD has not formally defined the roles and responsibilities of the ISB. Without designated responsibilities, the ISB's effectiveness is hindered in implementing the migration systems effort and in working with the Military Communications-Electronics Board, which is responsible for command and control systems. Without a formalized ISB charter, no single authoritative body exists to represent the intelligence community in the selection of migration systems and in the establishment of an overall architecture that assures system interoperability.

Military Communications-Electronics Board (MCEB). The Assistant Secretary of Defense, (Command, Control, Communications, and Intelligence) tasked the MCEB in a December 20, 1993, memorandum to monitor the migration effort for the command and control systems. However, the charter for the MCEB, dated May 6, 1985, gives the MCEB the authority only to perform radio frequency management functions for the DoD. Nonetheless, the MCEB is selecting computer architecture standards for the Global Command and Control System (the key command and control migration system). Furthermore, the MCEB charter neither provides for the MCEB to coordinate with organizations, such as the ISB, nor discusses the MCEB's role in the migration process. The coordination interface is critical because the Global Command and Control System is intended to provide a means of sending intelligence information into the command and control systems that support the warfighters. The ISB and MCEB must work together to assure the selection of compatible standards for interoperability between the Global Command and Control System and the DoDIIS to support the warfighters.

Overall Architecture for Communications and Intelligence Systems

Client Server Environment and Common Operating Environment. The Joint Staff's data base, Joint Uniform Lessons Learned from Desert Shield/Desert Storm, identified the lack of interoperability of intelligence systems with command and control systems as a major impediment in the prosecution of the war. To correct that critical shortcoming, the intelligence community is developing a common Client Server Environment interoperable standard infrastructure of support services for the DoDIIS, corresponding to the Client Server Environment effort. With a similar intent, the MCEB is building a Common Operating Environment. The Common Operating Environment will provide the Global Command and Control System:

> . . . a set of integrated support services that support the mission application software requirements and a corresponding software development environment, architecture principles, and methodology which assists in the development of mission application software . . . .

As of June 1994, both the ISB and the MCEB planned to promote interoperability between the DoDIIS and the Global Command and Control System by choosing common standards for the Client Server Environment and Common Operating Environment. However, the ISB and MCEB have not yet chosen the common standards.

Although the ISB and the MCEB have made joint progress, they have no formal agreement to ensure that the Client Server Environment and Common Operating Environment standards will be compatible. Due to the significance of the effort to achieve interoperability, the working relationship of the ISB and MCEB should be formalized to assure attainment of interoperability. The Assistant Secretary of Defense (Command, Control, Communications, and Intelligence), as Director of Information Policy, should establish charters for the ISB and MCEB that identify each board's responsibilities in assuring a common architecture. The charters should ensure that standards, goals, and objectives are authoritative and enforceable. The charters will promote interoperability between the intelligence systems and the command and control systems. Furthermore, to assure that systems conform to a common architecture, the intelligence community must identify the complete universe of systems as a prerequisite to selecting migration systems.

Universe of Migratory and Legacy Systems

ISB Tasking to the DoDIIS Community to Identify Systems. On November 12, 1993, the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) gave the intelligence community generic evaluation criteria for the selection of migration systems. On December 20, 1993, the Assistant Secretary expanded on that criteria and tasked the ISB to evaluate, consolidate, and integrate the input for intelligence systems, stating ". . . it is imperative that they [the responses from the intelligence community members] contain complete and accurate information." In response to the tasking, the ISB issued a memorandum on February 3, 1994, to the intelligence community that required ". . . the identification of DoD intelligence information systems . . . that would form the baseline for follow-on efforts to transition to a standards-based, open systems oriented systems environment - 'legacy' and 'migration' systems respectively." The Deputy Secretary of Defense required in an October 13, 1993, memorandum that the nomination process for migratory systems be completed by March 31, 1994, and that the entire transition not exceed 3 years.

Identifying Systems and Costs. The auditors had difficulty in identifying intelligence systems and system costs because centralized reporting for those two areas did not exist. Only systems under development or special systems, such as systems funded in the Tactical Exploitation of National Capabilities Programs, are identifiable in the budget justifications to Congress. The remaining operational systems and associated costs are incorporated in the base figure of the budget justification.

Intelligence systems for the General Defense Intelligence Program (GDIP) represent only about 28 percent of the intelligence systems budget, yet the GDIP reported 73 percent of the intelligence systems. Appendix B illustrates the disparity between Military Department and Defense agency responses to the ISB tasking.

Since funding information on DoD intelligence systems was not centrally available, the auditors identified unreported systems by interviewing officials and reviewing system architectures at the Military Departments and Defense agencies and by reviewing budget justification material.

Identifying the DoDIIS Universe. In response to the migration tasking, the intelligence community identified 273 systems, 48 of which were recommended for migration to a common design standard. A summary of migration systems submitted by organization is in Appendix A. Although the system identification effort was extensive, the results did not generate a complete universe of intelligence systems.

Reporting Results of the DoDIIS Universe. The December 20, 1993, reporting guidance from the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) for selection of migration systems exempted only "mission support collection systems[3]" from the migration review. The guidance established no minimum-cost threshold. However, the audit identified 22 unreported systems, with an estimated development budget of more than $100 million (excludes 13 Defense Mapping Agency [DMA] systems), that senior ISB officials agreed they should review as potential legacy systems. A list of those systems is in Appendix C. Incomplete reporting of DoDIIS systems occurred for the following reasons.

Unreported Systems. Of the 22 unreported systems, the audit identified 20 systems (5 Army, 1 Navy, 1 National Security Agency, and 13 DMA) that were not reported to the ISB for migration review. The annual costs for the Army, Navy and National Security Agency systems totaled more than $100 million. An ISB official told us that the Army and Navy systems were not identified due to insufficient time to develop a comprehensive list of systems. The National Security Agency believed the system cost was "below a threshold of interest." DMA's submission to the ISB did not identify the 13 systems because DMA considered those systems to be components or individual subsystems that perform specific functions within the framework of the Mapping, Charting, and Geodesy Production System. A DMA official has agreed to provide an addendum to DMA's original submission to the ISB to include those 13 systems.

ISB Exemption. Two Air Force systems were not reported because of an ISB exemption. The February 1994 ISB guidelines to the intelligence community exempted communications systems, mission-specific collection systems, collection-specific processors, special access programs, training and

[3]Systems that receive the initial signal of, for example, a potential target or item of interest.

simulation systems, site-specific tools, and site-specific architectures in a desire to meet the 6-month time frame for identifying migration systems. An ISB senior official stated that several systems in those categories were yet to be reported as of June 1994. Accordingly, we believe the ISB exemptions need further clarification and the intelligence community needs to resubmit identified systems.

Once the complete universe of systems has been identified, the possibility of duplicate systems remains and lack of interoperability exists among systems funded through the TIARA program. For example, the Army, Navy, and Air Force have not compared their systems, the All-Source Analysis System, Joint Maritime Command Information System, and Combat Intelligence System, respectively, to determine whether they are interoperable or duplicative. Those three systems perform essentially the same function with features unique to the missions of each Military Department.

Actions Related to Identifying Intelligence Systems. As of June 1994, the ISB had planned three actions that should partially resolve the incomplete identification of intelligence systems.

o The ISB is issuing a letter to the intelligence community to clarify the parameters of the systems to be reviewed for selection as migration systems. As a result, the intelligence community will have another opportunity to report selected systems, particularly those collection and processing systems that the ISB initially exempted from review.

o The ISB also plans to examine the information system support functions, known as applications, for the candidate migration systems to eliminate duplicative applications.

o Officials at the Joint Operations Intelligence Network, Air Force Electronic Systems Center, have been tasked to perform a feasibility study of fusing the TIARA All-Source Analysis System, the Joint Maritime Command Information System, and the Combat Intelligence System to produce one all-encompassing intelligence system that meets the needs of all the Military Departments. Once the potential for technical feasibility is analyzed, a logical and necessary follow-on step would be to perform a functional economic analysis to identify the optimal system solution. The functions and benefits of a functional economic analysis are discussed later in the report.

Migration Systems Summary. The GDIP provided the most complete response to the ISB's initial tasking, utilizing the GDIP's DoDIIS Management Board (DMB) Structure. The Director, Defense Intelligence Agency, established the DMB to manage GDIP information systems. The DMB convened a panel, representing all participants in the GDIP, including the Scientific and Technical Intelligence Centers and the unified commands, to choose migration and legacy systems. Overall, the DMB submitted 199 GDIP funded intelligence systems to the ISB, and 29 of those systems were candidate migration systems. The DMB identified the remaining 170 systems as legacy systems.

Need for Complete Identification of Systems. Incomplete identification of systems precludes performing a functional economic analysis needed to achieve the interoperability and reduced cost goals of the migration effort. Complete identification of intelligence information systems would assure the DoD that all user requirements are satisfied and that those requirements are not duplicative.

Acquisition of Intelligence Systems

DoD Regulations Relating to Performing an Economic Analysis. DoD Directive 8120.1, "Life-Cycle Management of Automated Information Systems," January 14, 1993, designates the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) as the senior DoD acquisition authority for major information management systems. Also, the Directive states that system cost estimates shall be determined and supported using a functional economic analysis and requires maximum use of standards-based, commercial, off-the-shelf products.

Functional Economic Analysis. DoD Manual 8020.1-M, "Functional Process Improvement," January 1993, defines a functional economic analysis (FEA) as a structured proposal that serves as the principal part of the documentation that supports selection of a migration system.

> . . . It [FEA] includes an analysis of functional process needs or problems, proposed solutions, assumptions and constraints, alternatives, life-cycle costs, benefits and/or cost analysis, and investment risk analysis . . . .

Although the FEA is a key method for justifying additional investment and is a mechanism to assure meeting cross-functional integration goals, only one of the intelligence organizations we reviewed made a preliminary FEA.

Guidance on Performing an FEA. The ISB issued a memorandum to the intelligence community on February 3, 1994, that provided preliminary guidance for evaluating candidate migration systems. The guidance states:

> Cost-benefit analysis must be the basis for a migration system selection. At a minimum, components must identify the existing and programmed resources associated with all legacy systems that a migration system is intended to replace as well as any resources currently allocated to the migration system and an estimate of the cost to reengineer the migration system. . . . Development of a programmatic strategy that can realistically quantify potential savings, and at the same time, assure investment in continuing essential operations, the transition of migration systems, and initiatives to improve intelligence information exchange is of major concern to the ISB.

In addition, on February 22, 1994, the Defense Information Systems Agency provided instructions on how to develop plans to transition all information technology services to migration systems. That guidance provides a consistent process to be used in preparing an FEA (see Figure 1).

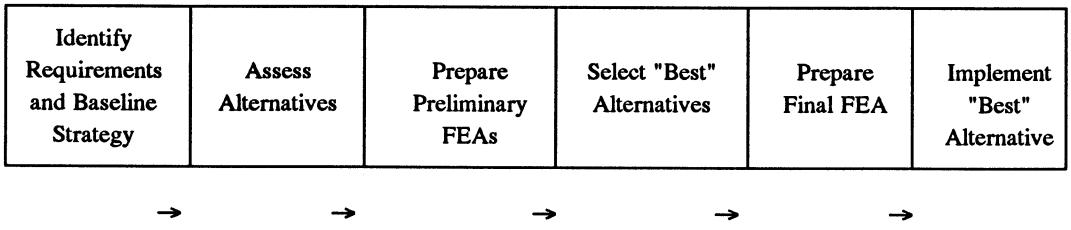


Figure 1. FEA Process

Preliminary Functional Economic Analysis. The objective of the preliminary FEA is to identify and quantify process improvement alternatives that offer an opportunity for further assessment and more detailed planning, based on significant differences in costs, benefits, or implementation risks. The preliminary FEA translates resource, schedule, and other information into quantitative estimates of the costs, benefits, and risks associated with implementing each alternative. The goal is to identify the single alternative that warrants a more detailed analysis. It is important to identify baseline costs and costs of improvement alternatives in order to decide whether alternatives need additional review.

An example of the significance of performing a preliminary FEA is demonstrated by examining the benefits that the CIO has determined in recommending migration of the Exploitation Support System. The CIO forecasts an opportunity to put $285 million to better use through FY 1999 by migrating to this new system.

The CIO's preliminary FEA also shows that to realize that opportunity, a near-term increase in funding will be needed for the reengineering of the CIO's migration system. In recognizing that funds were needed for reengineering migration systems, the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) established a contingency fund to meet those costs. However, because the intelligence community has not performed FEAs, documentation supporting additional fund requirements does not exist and the Assistant Secretary has no assurance that the contingency fund is adequate.

Final Functional Economic Analysis. The final FEA is the principal document in the approval decision documentation (for the overall process improvement alternative) and a part of the System Decision Paper (for a milestone review of the system-related parts of the process improvement alternative).

Migration Selection Process Without FEAs. The preliminary FEA is essential in identifying and supporting the selection of migration systems. Although the DoD has selected 48 intelligence systems for migration, only the CIO (the Navy and GDIP components have made an initial attempt in accomplishing aspects of the FEA) made a preliminary FEA for the Exploitation Surveillance System. According to officials associated with the migration effort, they did not complete or submit preliminary FEAs because clear guidance was lacking and adequate time was not available to meet the March 31, 1994, due date set by the Deputy Secretary of Defense. For example, an official with the Center for Information Management, Defense Information Systems Agency, stated that it would take an expert about 3 months to complete a preliminary FEA. The intelligence community did not receive clarification of guidance on how to perform an FEA until February 1994. Accordingly, to meet the March 1994 deadline, the intelligence community selected migration systems without the benefit of the time necessary to perform complete FEAs. Although the community's approach may support the selected migration systems, without a preliminary FEA, the DoD has no assurance that those systems are the most efficient and cost-effective alternatives.

Commercial Off-the-Shelf Products. The Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) stated that DoD needs to move toward more commercial off-the-shelf products and Indefinite Delivery, Indefinite Quantity contracts. In accordance with that dictum, the Defense Intelligence Agency is reviewing vendor responses to its System Acquisition and Services Support solicitation of an Indefinite Delivery, Indefinite Quantity contract that will provide the UNIX and the Digital Operating System commercial, off-the-shelf software for the support of the intelligence community. We notified the Defense Information Systems Agency of the status of the Defense Intelligence Agency solicitation. Afterward, a senior Defense Information Systems Agency official told us that the awarded software products will be included in the data base of available products for the entire intelligence community. The contract will provide the benefit of a source of automated data processing applications, promote interoperability and timely procurement, and assist in reducing the cost of initiating individual contracts.

Summary

The goals of the DoDIIS migration effort are commendable, and significant progress has been made within the intelligence community to identify legacy and migration systems. However, the reduced costs associated with the migration effort will not be maximized unless the roles and responsibilities for implementation of the migration effort are formalized, a top-level architecture is established, the entire universe of intelligence information systems is identified, and functional economic analyses are performed in selecting migration systems. In addition, milestones for completion of the migration effort should be extended to permit a thorough review of the complete universe of intelligence systems and the completion of FEAs that will identify the costs and the benefits of the selected migration systems.

Recommendations for Corrective Action and Management Comments

We recommend that the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence):

1. Establish the roles and responsibilities of the Intelligence Systems Board and the Military Communications-Electronics Board with respect to the migration effort.

Management Comments. The Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) concurred and stated that his office will clarify the DoD information management policy in the functional area of command, control, communications, and intelligence in the Intelligence System's Board charter that is in draft. Also, criteria for the migration effort were developed and coordinated by staff members of the Intellience Systems Board and the Military Communications-Electronics Board.

2. Develop a comprehensive architecture to link the DoD intelligence community with the command and control function.

Management Comments. The Assistant Secretary concurred and stated that the goal is to develop an integrated, end-to-end, process, data, and systems model for the functional area of command, control, communications, and intelligence. Also, on August 11, 1994, the Deputy Secretary of Defense and the DCI declared INTELINK as the strategic direction for sharing and disseminating intelligence for the intelligence community. According to the Assistant Secretary, the INTELINK capability is the first activity in the process of creating the operational comprehensive architecture to link the DoD Intelligence Community with command and control.

3. Require the Military Departments and the Defense agencies to establish an all-inclusive list of intelligence systems for review in the DoD Intelligence Information System migration effort.

Management Comments. The Assistant Secretary concurred, stating that a number of initiatives are under way to ensure the intelligence migration systems list is all inclusive. Also, systems not submitted as either legacy or migration systems run the risk of being eliminated as a result of the budget review process.

4. Require the Military Departments and the Defense agencies to base selection of their nominated migration systems on a functional economic analysis in accordance with the October 13, 1993, memorandum from the Deputy Secretary of Defense.

Management Comments. The Assistant Secretary concurred, stating that the migration process is a multistaged one, with the focus thus far on consolidation to a more efficient set of systems. However, additional evaluation of systems will be needed for further reduction.

5. Identify and provide adequate time frames to allow for completing the actions in Recommendations 3. and 4. and for activating migration systems.

Management Comments. The Assistant Secretary concurred, stating that the August 1994 selection of INTELINK for sharing and disseminating intelligence and the integration of intelligence with command and control architecture into a common infrastructure lessens the need for multiple mission-unique applications and will contribute significantly to achieving the 3-year goal for migration.

Part III - Additional Information

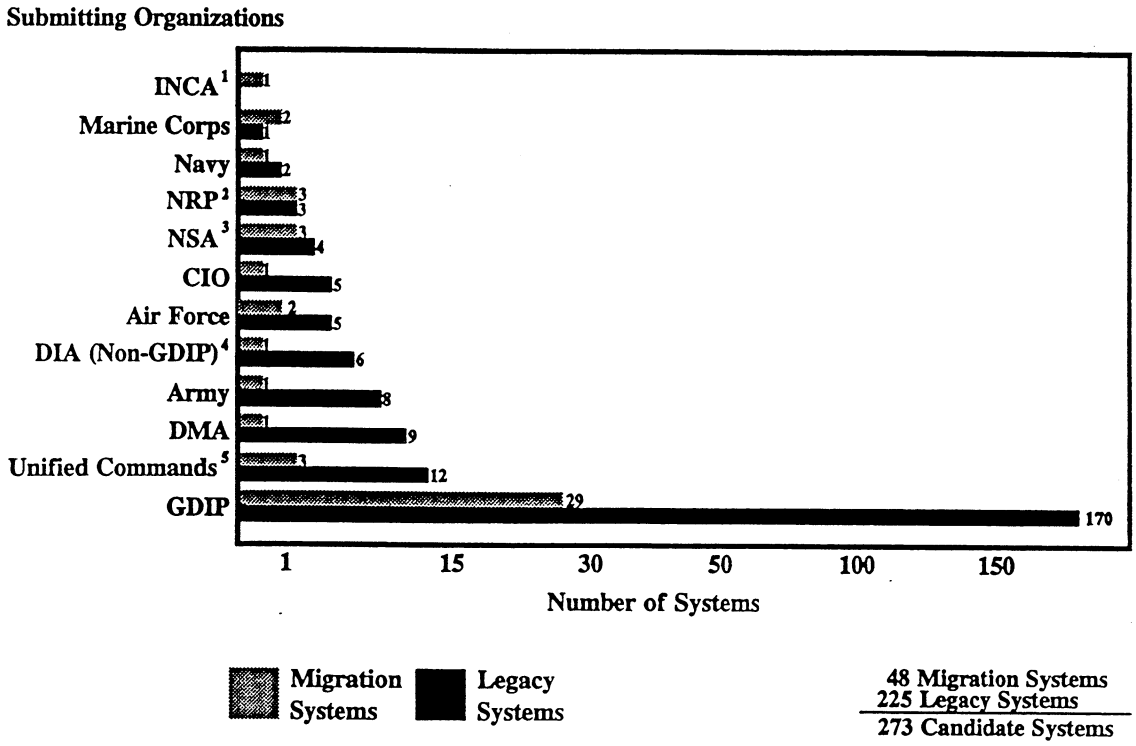
Appendix A. Migration Systems Summary

Organization	Identified Systems	Legacy Systems	Migration Systems
General Defense Intelligence Program	199	170	29
Command Unique*	15	12	3
Defense Mapping Agency	10	9	1
U.S. Army	9	8	1
Defense Intelligence Agency (non-General Defense Intelligence Program)	7	6	1
National Security Agency	7	4	3
U.S. Air Force	7	5	2
Central Imagery Office	6	5	1
National Reconnaissance Program	6	3	3
U.S. Marine Corps	3	1	2
U.S. Navy	3	2	1
Intelligence Communications Architecture	1	--	1
Total	273	225	48

Source: Intelligence Systems Board briefing to the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) on May 4, 1994.

*Intelligence information systems used exclusively at Scientific and Technical Centers and commands.

Appendix B. Migration Systems Summary by Organization



Source: Submitting organizations provided Intelligence Systems Board data.

[1]Intelligence Communications Architecture
[2]National Reconnaissance Program
[3]National Security Agency
[4]Defense Intelligence Agency
[5]Unified Command Submissions are Command Unique

Appendix C. Assessment of DoD Automated Information Systems

Potential legacy systems, by sponsoring organizations, not submitted for migration assessment.

Army Systems

Electronic Processing and Dissemination System
Forward Area Support Terminal
Joint Surveillance Target Attack Radar System Ground Station Module
Mobile Integrated Tactical Terminal
U.S. Army, Europe, Modernized Imagery Exploitation System

Navy System

Secondary Imagery Dissemination System

Air Force Systems

Joint Service Imagery Processing System
Pacific Air Force Interim National Exploitation System

National Security Agency System

Capability Analysis for Wartime Support

Defense Mapping Agency Systems

Air Facility Graphic Workstation
Air Facilities System
Alternative Imagery Exploiter
Classified Hydrographic Information Processing System
Consolidated Navigation System
Digital Aeronautical Flight Information System
Digital Imagery Transmission System
Electronic Navigation Digital Data System
Light Table Mensuration System
Product and Extraction Database
Point Positioning Production System
Source Acquisition Segment
Video Point Positioning Database

Appendix D. Summary of Potential Benefits Resulting from Audit

Recommendation Reference	Description of Benefit	Amount and/or Type of Benefit
1.	Program Results and Internal Controls. Establishes guidance that will assign migration responsibilities.	Nonmonetary.
2.	Program Results and Internal Controls. Establishes a top-level architecture.	Nonmonetary.
3.	Program Results and Internal Controls. Retasks the intelligence community to establish a complete universe of systems.	Nonmonetary.
4.	Compliance and Internal Controls. Requires a functional economic analysis for candidate systems.	Undeterminable. Monetary benefits should be determinable upon elimination of additional legacy systems.
5.	Program Results and Internal Controls. Allows adequate time frames for the completion of the migration effort.	Nonmonetary.

Appendix E. Organizations Visited or Contacted

Office of the Secretary of Defense

Assistant Secretary of Defense (Command, Control, Communications, and Intelligence), Washington, DC
Intelligence Program Support Group, Washington, DC
Intelligence Communications Architecture, Tysons Corner, VA

Department of the Army

Deputy Chief of Staff for Intelligence, Washington, DC

Department of the Navy

Office of Naval Intelligence, Suitland, MD
Director, Command and Control Systems Division, N62-J, Washington, DC

Department of the Air Force

497th Intelligence Group, Washington, DC
National Air Intelligence Center, Dayton, OH
Special Activities Air Force, Washington, DC

Unified Commands

Headquarters, U.S. Atlantic Command, Norfolk, VA
Atlantic Intelligence Center, Norfolk, VA
Headquarters, U.S. Strategic Command, Omaha, NE
Headquarters, U.S. European Command, Stuttgart, Germany
Joint Analysis Center, Molesworth Air Force Base, England
U.S. Army, Europe, Heidelburg, Germany
66th Military Intelligence Brigade, Augsburg, Germany

Defense Agencies

Central Imagery Office, Vienna, VA
Defense Information Systems Agency
Joint Interoperability Engineering Office, Reston, VA
Center for Integration and Interoperability, Vienna, VA

Defense Agencies (cont'd)

Defense Intelligence Agency, Washington, DC
Defense Mapping Agency, Fairfax, VA
National Reconnaissance Office, Washington, DC
National Security Agency, Fort George G. Meade, MD

Joint Staff

Director for Joint Chiefs of Staff Support, Defense Intelligence Agency (J-2), Washington, DC
Director for Command, Control, Communications, and Computer Systems (J-6), Washington, DC

Non-Defense Federal Organizations

Intelligence Community Management Staff, Langley, VA
Intelligence Systems Board, Langley, VA

Appendix F. Report Distribution

Office of the Secretary of Defense

Under Secretary of Defense (Comptroller)
Assistant Secretary of Defense (Command, Control, Communications, and Intelligence)
  Intelligence Program Support Group
  Intelligence Communications Architecture
Assistant to the Secretary of Defense (Public Affairs)
Director, Joint Staff

Department of the Army

Secretary of the Army
Auditor General, Department of the Army

Department of the Navy

Secretary of the Navy
Assistant Secretary of the Navy (Financial Management)
Auditor General, Department of the Navy

Department of the Air Force

Secretary of the Air Force
Assistant Secretary of the Air Force (Financial Management and Comptroller)
Auditor General, Department of the Air Force

Unified Commands

Commander In Chief, U.S. Atlantic Command
Commander In Chief, U.S. Strategic Command
Commander In Chief, U.S. European Command

Defense Organizations

Director, Defense Contract Audit Agency
Director, Defense Intelligence Agency
Director, Defense Logistics Agency
Director, National Security Agency
Inspector General, Central Imagery Office

Defense Organizations (cont'd)

Inspector General, Defense Intelligence Agency
Inspector General, Defense Information Systems Agency
Inspector General, Defense Mapping Agency
Inspector General, National Reconnaissance Office
Inspector General, National Security Agency
Director, Defense Technical Information Center

Non-Defense Federal Organizations

Office of Management and Budget
Technical Information Center, National Security and International Affairs Division, General Accounting Office

Chairman and Ranking Minority Member of Each of the Following Congressional Committees and Subcommittees

Senate Committee on Appropriations
Senate Subcommittee on Defense, Committee on Appropriations
Senate Committee on Armed Services
Senate Committee on Governmental Affairs
Senate Select Committee on Intelligence
House Committee on Appropriations
House Subcommittee on Defense, Committee on Appropriations
House Committee on Armed Services
House Subcommittee on Readiness, Committee on Armed Services
House Committee on Government Operations
House Subcommittee on Legislation and National Security, Committee on Government Operations
House Permanent Select Committee on Intelligence
House Subcommittee on Program and Budget Authorization, House Permanent Select Committee on Intelligence
House Subcommittee on Oversight and Evaluation, House Permanent Select Committee on Intelligence

Part IV - Management Comments

Assistant Secretary of Defense (Command, Control, Communications, and Intelligence) Comments

Final Report Reference

ASSISTANT SECRETARY OF DEFENSE

6000 DEFENSE PENTAGON
WASHINGTON, DC 20301-6000

1 NOV 1994

COMMAND, CONTROL, COMMUNICATIONS AND INTELLIGENCE

MEMORANDUM FOR THE INSPECTOR GENERAL, DOD

SUBJECT: Audit Report on the Department of Defense Intelligence Information System (Project No. 4RF-0019)

This office has reviewed the draft audit report and offers the following comments on each of the five recommendations for corrective action:

Recommendation 1

a. Establish the roles and responsibilities of the Intelligence Systems Board and the Military Communications Electronics Board (MCEB) with respect to the migration effort.

Concur. Comment: The roles and responsibilities of the ISB in supporting the ASD(C3I) in the implementation of DoD Information Management Policy in the Functional Area of C3I will be clarified in the ISB charter, now in draft.

My memorandum, dated December 20, 1993, on the solution of migration systems, forwarded the criteria to be used in the selection of command and control, intelligence, and information management migration systems. The ISB was tasked to evaluate, consolidate, and integrate the inputs for intelligence systems. The MCEB was requested to provide a similar service for C2 inputs. The criteria and results were coordinated and mutually worked by staff members of the ISB and MCEB.

Recommendation 2

b. Develop a comprehensive architecture to link the DoD Intelligence Community with the command and control section.

Concur. Comment: Our goal is the development of an integrated, end-to-end, process, data, and systems models of the Functional Area of C3I. To facilitate this modeling, the C3I Functional Area is subdivided into Functional Activities. These are being revised to assure C3I modeling activities are fully integrated and tied to the modeling of operations. The models developed for each Functional Activity will then be integrated into a comprehensive process, data and systems model for the Functional Area of C3I.

With respect to the linking of the DoD Intelligence Community with command and control, the success of the Intelligence Systems Secretariat's (ISS) INTELINK prototype, led the Deputy Secretary of Defense and the DCI, on August 11, 1994, to declare INTELINK as the strategic direction for Intelligence Community product dissemination systems. INTELINK was recommended to be the Intelligence Community architecture for sharing and disseminating intelligence. To accomplish this, the Director, ISS was tasked to ensure effective integration of

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INTELINK into classified or unclassified architectures. As part of this, the ISS was also tasked to establish a Secret level INTELINK to interface directly with C3 systems. The soon-to-be operational INTELINK-Secret is in direct support of the JCS (J-6) sponsored Global Command and Control System (GCCS). During the recent JWID-94, a proof-of-concept demonstration directly connected the GCCS and the INTELINK-S capability. This capability is remaining operational after the exercise and is the first activity in the process of creating the operational comprehensive architecture to link the DoD Intelligence Community with command and control.

c. Require the Military Departments and the Defense Agencies to establish an all-inclusive list of intelligence systems for review in the DoD Intelligence Information System migration effort. Recommendation 3

Concur. Comment: There are a number of initiatives underway to ensure the Intelligence migration systems list is all inclusive. The deferred list of certain intelligence processing systems and certain intelligence broadcast/receive systems was included in the application-level review. Results of this review will be included in the Intelligence Systems Assessment Phase II report. The site-unique systems, which came in after the cut-off date for the Phase I report, will be part of the Phase II report. It is also anticipated that the joint FY-96 budget review, co-chaired by the Deputy Secretary of Defense and the DCI, will endorse the strategy of transitioning the funding resources from the legacy systems to the necessary re-engineering costs to reach the objective migration systems. Systems not submitted as either legacy or migration systems run the risk of being eliminated as a result of this budget review process.

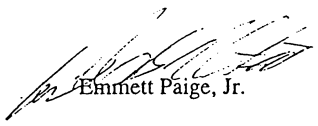
d. Require the Military Departments and the Defense Agencies to base selection of their nominated migration systems on a functional economic analysis (FEA) in accordance with the Deputy Secretary of Defense memorandum dated October 13,1993. Recommendation 4

Concur. Comment: The systems migration process is a multi-staged one, which has not yet been completed. What has been done thus far is largely a consolidation to a smaller and more efficient set of systems, which will in turn be evaluated for further reduction. As noted on page 15 of your audit, the time frames for response to meet the March 31, 1994, suspense, made it very difficult to perform adequate FEA's for most of the prospective migration systems. Also, as stated in your audit, detailed guidance on how to perform an FEA was not available until February.

e. Identify and provide adequate time frames to allow for completing the actions in Recommendations c. and d. and for activating migrations. Recommendation 5

Concur. Comment: The entire Defense Department was charged with identifying and selecting migration systems with an implementation schedule not to exceed three years. The DoD C3I community is committed to meeting this goal. While some can be done in three years, we do not believe all can. However, we will be defining specific schedules and programmatics. There remains much work to be done to accomplish this. The strategic direction

of INTELINK, and the integration of intelligence with command and control architectures into a common infrastructure lessening the need for multiple mission unique applications, will contribute significantly to achieving this goal.



Emmett Paige, Jr.

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