

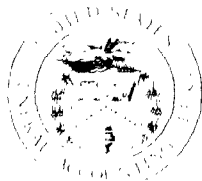
GAO

Report to the Chairman, Subcommittee
on Defense, Committee on
Appropriations, House of
Representatives

July 1990

INFORMATION
RESOURCES

Army Corporate Data
Base Disregards
Congressional and
DOD Direction



142029

957

RESTRICTED—Not to be released outside the
General Accounting Office unless specifically
approved by the Office of Congressional
Relations.

RELEASED

549003



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

**Information Management and
Technology Division**

B-239633

July 19, 1990

The Honorable John P. Murtha
Chairman, Subcommittee on Defense
Committee on Appropriations
House of Representatives

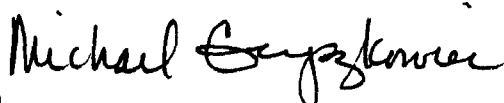
Dear Mr. Chairman:

This report responds to your September 5, 1989, request that we review the Department of the Army's efforts to develop a corporate data base.

As agreed with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from the date of this letter. At that time, we will send copies to interested parties and make copies available to others upon request.

The report was prepared under the direction of Samuel W. Bowlin, Director, Defense and Security Information Systems, who can be reached at (202) 275-4649. Other major contributors are listed in the appendix.

Sincerely yours,


for Ralph V. Carlone
Assistant Comptroller General

Executive Summary

Purpose

In fiscal year 1988, the Army canceled its Corporate Data Base Project because it could not address congressional and Secretary of Defense questions about mission need and potential economic benefit. The Army estimated that the project would cost approximately \$130 million, excluding some development and all operations and maintenance costs.

The Chairman of the Subcommittee on Defense, House Committee on Appropriations, asked GAO:

- to determine whether the Army is pursuing the objectives of the canceled project through other efforts, and if so,
- to compare the merits of the Army's current efforts to those of a centrally directed program subject to Army and Defense oversight.

Background

The Army began the Corporate Data Base Project in 1984 to improve the quality of information used to make personnel, equipment, financial, and other decisions. The project called for the development of an Army-wide data base that would be accessible to decision-makers at the headquarters, major command, and installation levels. Although portions of the data base would be located at these three organizational levels, it would ultimately operate as a single data base.

The Congress denied the Army's fiscal year 1987 funding request for the project because the Army had not adequately defined requirements, performed a cost/benefit analysis, or determined the total project cost. The Congress also directed the Army to submit the project to the Office of the Secretary of Defense for an oversight review.

After the September 1986 oversight review, the Office of the Secretary of Defense directed the Army to justify the need for the project, determine its total costs and benefits, and establish a management approach for controlling its development and operation. In 1988, the Army canceled the project because it could not provide the required justification or determine the project's potential economic value.

Results in Brief

Without regard for congressional and Department of Defense direction, the Army is continuing to develop an ad hoc corporate data base. GAO identified eight initiatives at the headquarters, major command and installation levels that are intended to provide capabilities identical or very similar to the canceled data base project. Because these initiatives are not centrally-directed or in compliance with pertinent federal and

Defense acquisition policies, the Army cannot be sure that these systems will meet valid mission needs, will work together and not duplicate one another, or that they are cost effective. In addition, the Army has no idea how much money is being spent on these eight initiatives or what it will cost to develop, maintain, and operate the systems.

Principal Findings

The Army Is Pursuing Corporate Data Base Objectives

GAO's work at Army headquarters, two major commands, and selected installations identified eight system development initiatives which will provide capabilities identical or similar to the canceled Corporate Data Base Project. The headquarters-level initiatives involve the development of a standard data base, an unknown number of decision support systems, and a long-distance communications system. The initiatives at the major command and installation levels primarily involve the development of standard data bases. While GAO identified eight ongoing initiatives, there may be other Army organizations with initiatives also pursuing the objectives of the canceled project.

Army Management of Initiatives Lacks Merits of a Centrally-Directed Program

GAO also found that the Army's management of the initiatives lacks the merits of a centrally-directed program. Specifically, the initiatives lack a coordinated implementation plan and guidance because the Army has not established a program office or completed its information architecture (i.e., framework for how the systems would fit together). Consequently, the Army is not sure that the initiatives will work with and not duplicate others. The Army also is not sure that the initiatives will be able to exchange data useful to Army decision-makers because it has not fully implemented its data standardization program, which is intended to eliminate conflicting and inaccurate data.

Additionally, although federal and Defense policies call for requirements determinations and economic analyses prior to system development, the organizations controlling seven of the eight initiatives had begun system development but had not completed these requirements. The organization responsible for the eighth initiative plans to comply with the policies. Therefore, the Army lacks assurance that seven of the eight initiatives are based on valid requirements. The Army also does not know whether the most economical approach has been selected for

the seven initiatives or how much it may cost to develop any of the initiatives. In addition, the Army did not know how much had been spent on the initiatives because the organizations controlling them have not fully tracked costs.

Recommendations

GAO recommends that the Secretary of Defense direct the Secretary of the Army to suspend development activity on the eight initiatives GAO identified, and not to resume any of them unless all required federal and Defense acquisition requirements are met. This would include preparing mission needs statements and requirements and economic analyses. In addition, GAO recommends that the Secretary of Defense direct the Secretary of the Army to prohibit funding for any other initiative whose purpose is to achieve a corporate data base capability until the Army adequately justifies to the Office of the Secretary of Defense and the Congress the mission need and potential economic benefit of an Army-wide corporate data base.

Agency Comments

At the Chairman's request, GAO did not obtain official agency comments on a draft of this report. However, GAO did discuss the results of this review with agency officials and they agreed with the facts presented.

Contents

Executive Summary		2
Chapter 1		8
Introduction	History of the Army's Corporate Data Base	8
	Congressional and Defense Reaction to the Army Corporate Data Base Project	10
	Objectives, Scope, and Methodology	10
Chapter 2		13
The Army Is Pursuing Corporate Data Base Project Objectives	Headquarters Initiatives Are Pursuing Canceled Data Base Objectives	14
	Two Major Command Initiatives Are Following Corporate Data Base Objectives	15
	Installation Initiatives Are Pursuing the Objectives of the Canceled Project	15
Chapter 3		17
Army Management of Initiatives Lacks Merits of a Centrally- Directed Program	Initiatives Lack Central Direction	17
	Initiatives Are Not Based on Analysis of Need or Consideration of Economic Benefit	18
Chapter 4		24
Conclusions and Recommendations	Conclusions	24
	Recommendations	25
	Agency Comments	25
Appendix	Major Contributors to This Report	26
Tables		
	Table 2.1 Comparison Between the Initiatives and Corporate Data Base Project Objectives	13
	Table 3.1 Project Compliance With Federal and Defense Acquisition Policies	20

Abbreviations

ACSIM	Assistant Chief of Staff for Information Management
DOD	Department of Defense
FORSCOM	Forces Command
GAO	General Accounting Office
IMTEC	Information Management and Technology Division
TRADOC	Training and Doctrine Command

Introduction

The Army began the Corporate Data Base Project to improve the quality of information used to make personnel, equipment, organizational structure, and budget decisions affecting the entire Army. The project was intended to correct the adverse impact that inconsistent, duplicate, and conflicting data was having on these decisions by providing a repository of consistent, up-to-date information.

Army organizations at the headquarters, major command, and installation levels manage data needed for personnel, logistics, acquisition, operations, facilities, and budget and finance decisions. Headquarters is the focal point for pulling together data for all Army decisions. Below the headquarters level are several major commands that manage data within functional areas corresponding with headquarters. Two of the Army's major commands are the Training and Doctrine Command (TRADOC) and the Forces Command (FORSCOM). TRADOC is responsible for training all soldiers and establishing doctrine on how the Army will be organized and equipped. FORSCOM is responsible for the operations and readiness of all active and reserve Army units in the continental United States, Alaska, Puerto Rico, the Virgin Islands, and Panama.

The organizational level below the major commands consists of the installations. Worldwide the Army has 179 installations, with TRADOC and FORSCOM controlling 16 and 17 of them, respectively. Since the bulk of the Army personnel, equipment, facilities, and other assets are at installations, this level creates or processes much of the data needed for Army-wide decisions.

History of the Army's Corporate Data Base

In September 1983, the Vice Chief of Staff announced the need for a corporate data base, highlighting the adverse effect that conflicting and inconsistent data was having on Army-wide decisions. In 1983, the Army contracted with the American Management Systems and the Systems Research Applications Corporations for a joint study of the problem. In March 1984, the two firms issued a report on the Army's corporate data base.

According to the 1984 report, the Army's systems did not effectively support the information needs of the Army-wide decision process. Many of the systems managed data from the organizational or functional perspectives of their developers, without regard for overall Army information needs. While some systems operated at one or more of the Army's three organizational levels, many of the systems actually manipulated

the same data or subsets of the same data for different purposes. In addition, the systems collectively contained inconsistent or incomplete data.

In June 1984, the Assistant Chief of Staff for Information Management (ACSIM) directed the United States Army Management Systems Support Agency to develop a prototype to help evaluate the technical feasibility of a corporate data base. The Support Agency developed the prototype and determined that a corporate data base was technically achievable.

In December 1985, on the basis of the results of the prototype, the ACSIM issued a corporate data base concept paper and a plan of action. The ACSIM paper indicated that conceptually the corporate data base would be available to anyone with the appropriate clearance. Portions of the data base would be located at each of the three organization levels, but would operate together as a central data base.

The ACSIM plan established guidelines for development of the Army Corporate Data Base and assigned the Information Systems Command responsibility for the project. The Command delegated program management responsibility to its Information Systems Engineering Command, which designated a project manager for the Army Corporate Data Base Project in August 1986.

In September 1986, the Army Corporate Data Base Project Office issued an implementation strategy, which called for a three-phased development of the proposed data base. Phase 1 called for the development of separate data bases with a common data structure that would be connected via a communications network to meet the information requirements of the headquarters, major commands, and installations. The common data structure was to be defined in an Army-wide data dictionary. In this phase, users would be able to obtain data from the data bases on the network if they knew its location. Phase 2 specified the development of a distributed data base to provide shared access to data. With this system capability, users would be able to obtain data from any of the separate data bases developed under phase 1 without knowing its location because the data bases would begin to operate as one. Phase 3 called for the incorporation of artificial intelligence, or enhanced decision aides, into the distributed data base. Artificial intelligence capabilities would be made available to help users quickly analyze multiple alternatives, select and locate data, or formulate questions for decision-making purposes. The Army estimated that the project would cost approximately \$130 million, excluding some development and all operations and maintenance costs.

Congressional and Defense Reaction to the Army Corporate Data Base Project

While reacting favorably to the data management disciplines associated with the Corporate Data Base Project, the Congress denied the Army's fiscal year 1987 appropriations request to buy computers for the project because of concerns about the approach. In its August 14, 1986, report on the Department of Defense Appropriations Bill, 1987, the House Committee on Appropriations stated

The Committee is excited about the Army's plans to develop . . . a central approach to management of data. However, a significant financial investment will be necessary to accomplish these objectives. The amount required has not been disclosed to the Congress. Further, it appears that the formal requirements determination, economic analysis, and other prerequisites dictated by the Defense Department's life cycle management policy for acquisition of computers are not in place for the Corporate Data Base.... Therefore, hardware acquisition at this time is premature. The Committee would be receptive to a reprogramming request during fiscal 1987 if the Comptroller of the Defense Department determines it is warranted after a formal oversight review of Army plans.

The Appropriations conferees agreed with the House Committee and expressed concern that the acquisition had not been approved by the Major Automated Information Systems Review Committee. Further, the conferees directed the Army to limit its obligation of funds to those needed for planning and defining requirements.

On September 23, 1986, the Defense Major Automated Information Systems Review Committee reviewed the Army's Corporate Data Base Project. In a December 1986 memorandum, the Defense Committee noted that the Army's justification for the project was based on generic problems and did not demonstrate that the corporate data base would satisfy specific mission needs or result in economic benefit. Further, the memorandum noted that the Army had not adequately addressed technical, managerial, financial, or operational issues. The Committee directed the Army to demonstrate all aspects of developing and operating the data base before proceeding with the project. Although the Army developed a demonstration, it canceled the Corporate Data Base Project in fiscal year 1988 because it could not define the mission criticality or economic benefit of the project.

Objectives, Scope, and Methodology

On September 5, 1989, the Chairman, Subcommittee on Defense, House Committee on Appropriations, asked GAO whether the Army is continuing to pursue the objectives of the canceled Corporate Data Base Project. Our objectives were to (1) determine whether the Army is still pursuing the objectives of the Corporate Data Base Project through

various headquarters, major command, and installation-level initiatives; and (2) if so, compare the merits of the Army's current approach with that of a centrally-directed program subjected to Defense and Army oversight.

To accomplish our objectives, we identified and reviewed selected Army data base development efforts. We performed our work at the Department of Defense and Army headquarters in the Washington, D.C. area; the Information Systems Command at Fort Huachuca, Arizona; the Information Systems Engineering Command at Fort Belvoir, Virginia; TRADOC headquarters at Fort Monroe, Virginia; FORSCOM headquarters at Fort McPherson, Georgia; and at Army installations in Fort Sill, Oklahoma, and Fort Hood, Texas.

For background on the Army's original project, we interviewed knowledgeable Defense and Army officials, reviewed pertinent Army studies and analyses, and Corporate Data Base Project documents. We also reviewed Department of Defense Inspector General, Department of the Army Inspector General, and Army Audit Agency reports.

To determine whether current Army projects are pursuing corporate data base objectives, we reviewed Army planning documents for the canceled project to identify key project objectives and organizations responsible for accomplishing them. We contacted the responsible organizations to determine their progress toward accomplishing the identified objectives. On the basis of this work, we identified eight initiatives and compared the objectives of the identified initiatives to those for the canceled Corporate Data Base Project. Given the time constraints of our review and the original scope of the canceled project, we did not attempt to identify all initiatives following the objectives of the canceled project. Additionally, we traced the origins of the current initiatives to determine whether they were part of the original Corporate Data Base Project.

To compare the merits of the Army's current approach to that of a centrally directed program subjected to Defense oversight, we reviewed the Army's Corporate Data Base Project planning documents to identify the expected benefits of central project management. Also, we assessed the current initiatives to determine whether they were being developed in accordance with federal, Defense, and Army policies and regulations for automated information systems. We also spoke with officials from the National Institute of Standards and Technology on their guidelines for prototype development with data base management systems.

We conducted our review from September 1989 to May 1990 in accordance with generally accepted auditing standards. As the Chairman requested, we did not obtain formal written comments from the Department of the Army on a draft of this report. We did, however, discuss the issues in this report with officials from the Office of the Secretary of Defense and the Department of the Army and they agreed with the facts presented.

The Army Is Pursuing Corporate Data Base Project Objectives

We identified eight Army information system development initiatives that are pursuing the objectives of the canceled Corporate Data Base Project. Specifically, we identified three headquarters, two major command, and three installation-level initiatives following various objectives of the canceled project. The three headquarters-level initiatives involve the development of a standard data base, an unknown number of decision support systems, and a long-distance communications system. The five initiatives at the major command and installation levels primarily involve the development of standard data bases. There may be other initiatives at Army headquarters organizations, major commands, and installations that we did not visit which are also pursuing objectives of the canceled project.

As noted in chapter 1, the Army planned to implement the corporate data base in three phases. Phase 1 involved development of standard data bases at the headquarters, major command, and installation levels and use of telecommunication systems to permit remote users to access them. Phases 2 and 3 called for the use of distributed data bases and artificial intelligence, respectively. The following table illustrates how the objectives of the eight initiatives compare with those of the canceled Corporate Data Base Project.

Table 2.1 Comparison Between the Initiatives and Corporate Data Base Project Objectives

Initiatives	Corporate Data Base Objectives			
	Phase 1	Phase 2	Phase 3	
	(Standard data base)	(Telecom-munications)	(Distributed data base)	(Artificial intelligence)
Headquarters				
Decision resources data base	X			
Decision support systems	X	X	X	X
Army management support network ^a		X		
Major Command				
TRADOC decision support systems	X	X	X	X
FORSCOM command data base	X	X	X	
Installation				
Army-wide installation support modules	X			
TRADOC installation support modules	X	X		
Fort Hood integrated data base	X			

An X indicates that the initiative is pursuing the corporate data base objective.

^aThis network permits users to access data bases at the headquarters, major command, and installation levels.

Headquarters Initiatives Are Pursuing Canceled Data Base Objectives

The three headquarters initiatives involve the development of a standard data base called the Decision Resources Data Base, decision support systems under the Headquarters Decision Support Systems effort, and a long-distance communication system called the Army Management Support Network. The Information Systems Command at the Pentagon is developing the Decision Resources Data Base, which is intended to provide a repository of data to improve headquarters decision-making. A December 1988 Army information paper on the data base called it the headquarters component of the Army's Corporate Data Base. Two systems that will initially use the data base process organizational, personnel, and equipment data on all Army units from around the world. Army officials familiar with both the canceled project and the data base agreed it is pursuing the headquarters objectives of the canceled project.

The headquarters Decision Management Agency is pursuing another initiative, the Headquarters Decision Support Systems, which involves the development of an unknown number of computer applications and data bases that follow objectives of the canceled corporate data base project strategy. Similar to objectives in the Army's 1985 Corporate Data Base Concept Paper and Plan, the systems are being developed to improve Army decision-making by allowing users access to data in standard and other data bases at the headquarters, major command, and installation levels. Like the canceled project, the Headquarters Decision Support Systems call for the use of artificial intelligence and distributed data bases. Under this initiative, the Army also developed a telecommunications system called the Headquarters Decision Support Systems Network, which permits over 2,000 users to access the systems. The 1987 Decision Support Systems Master Plan calls for implementing these systems Army-wide. Headquarters Decision Systems Management Agency officials agreed that the initiative is pursuing many objectives established for the canceled Corporate Data Base Project.

The Information Systems Command at the Pentagon has also installed a network like that called for in the Army's Corporate Data Base Project strategy to provide long-distance communications capability. The Army Management Support Network provides long-distance communications among headquarters, TRADOC, FORSCOM, Depot Systems Command, and Fort Sill—all key sites called for in the corporate data base plans. In June 1985, the Army installed the first circuit in the network to increase the data available to the headquarters decision support systems. Army officials responsible for the network indicated that the fundamental objectives of the network are similar to those of the Corporate Data Base Project.

Two Major Command Initiatives Are Following Corporate Data Base Objectives

The two major command initiatives are TRADOC's Decision Support Systems effort and FORSCOM's development of a command data base. Started in July 1987, TRADOC's initiative is a prototype of the headquarters decision systems effort. As called for in the canceled Corporate Data Base Project, the TRADOC effort involves development of a corporate data base capability available to decision-makers throughout the Command. Additionally, the Command has developed an automated data dictionary to document standard Command data definitions and established a policy that Command software developers use the data dictionary.

TRADOC has installed a command-wide telecommunications network, called the TRADOC Decision Support System Network, to permit users to exchange data among the 16 Command installations and with Army headquarters via the Army Management Support Network. The Command's automation plans also call for the development of a distributed data base capability and the potential use of artificial intelligence capabilities like those called for in the canceled project. Officials responsible for the TRADOC Decision Support System agree that the objectives of this effort are the same as those for the Army's canceled corporate data base initiative.

Although not as extensive as the TRADOC program, FORSCOM has information system initiatives underway that are pursuing corporate data base objectives. The FORSCOM initiatives, which started in 1986, primarily focus on developing a standard Command data base for its headquarters decision-makers. The Command also is promoting common data structures and documenting data standards in a Command dictionary. Command plans call for linking Command headquarters and installation-level systems and data bases via a telecommunications network. FORSCOM officials agreed that the Command is pursuing objectives similar to those of the Army Corporate Data Base.

Installation Initiatives Are Pursuing the Objectives of the Canceled Project

The three installation-level initiatives pursuing objectives of the canceled project are the Army-wide Installation Support Modules Project, the TRADOC Installation Support Modules initiative, and the Fort Hood Integrated Data Base initiative. The Army-wide Installation Support Modules Project and the TRADOC Installation Support Modules initiative are different attempts to expand the Army's use of support systems developed at Fort Sill, a TRADOC installation. Fort Sill developed the Installation Support Modules to permit its users interactive access to information processed in the Army's standard automated information systems, which are centrally designed and maintained systems used by

more than one of the Army's major commands. The Fort Sill systems were also developed to permit data sharing at the installation. The export of the Fort Sill systems to other installations was an objective of the canceled Corporate Data Base Project.

The objective of the Army-wide Installation Support Modules Project is to install an upgraded version of the Fort Sill systems at all 179 Army installations. Similarly, TRADOC's Installation Support Modules effort involves enhancing the existing Fort Sill systems and installing them at its 16 installations. Army Officials responsible for both the Army-wide and TRADOC Installation Support Modules projects agreed that their initiatives are pursuing the objectives of the canceled Corporate Data Base Project.

The third installation-level initiative is being developed at Fort Hood and is called the Integrated Data Base. This project evolved from the Army Corporate Data Base Project. In the September 1986 Corporate Data Base Plan, the Army Corporate Data Base Project Manager designated Fort Hood as the site for the installation-level prototype of the Army Corporate Data Base. After the Army Corporate Data Base Project was canceled in late 1987, Fort Hood continued developing the prototype and changed the name of the project to the Fort Hood Corporate Data Base. In 1988, the project name was changed to the Integrated Data Base. While the project's scope has been reduced, it is still intended to be the standard data base for the installation. Officials from the installation's Directorate of Information Management agreed that the current data base project evolved from the canceled project and that the current project is pursuing the similar objectives.

Army Management of Initiatives Lacks Merits of a Centrally Directed Program

The Army's management of the eight initiatives (which are pursuing objectives similar to those of the canceled project) does not provide assurance that the systems will work together, not duplicate one another, and are based on valid mission needs. Further, the Army is not sure that a cost effective capability will be achieved. For example, we found that the initiatives lack central direction and guidance because the Army has not established a program office, completed its information architecture, or fully implemented its data standardization program. Additionally, organizations controlling seven of the eight initiatives have not completed requirements determinations to validate mission needs or economic analyses to ensure that the most cost-effective development approach has been used. The organization controlling the eighth initiative plans to comply with these requirements. Because these organizations have not completed economic analyses, the Army also does not know how much it may cost to develop the initiatives. Further, the Army does not know how much has been spent on the initiatives because the responsible organizations have not tracked their costs.

Initiatives Lack Central Direction

Without central project management and an information architecture, the Army is not sure that the initiatives will be able to work together and not duplicate other systems. Additionally, in the absence of an information architecture, the Army lacks a basis on which to plan a transition from its current to the future information systems environment. The Service also does not know whether the initiatives will be able to exchange data useful to Army decision-makers because it has not fully implemented a data standards program, which is intended to eliminate conflicting and duplicative data.

When the Army canceled the Corporate Data Base Project, it eliminated the program office that had been established to prepare an overall implementation strategy and oversee integration and coordination. The Corporate Data Base Implementation Strategy Plan stated that without central coordination and control the Army could not adequately integrate and manage the project. Although individual organizations are developing aspects of the corporate data base, the Army has not established a program office to manage and oversee the individual initiatives to ensure that they will work together and not duplicate others. According to Army headquarters officials, a program office was not established because the Service could not reach a consensus that a centrally-directed program was the best way to implement a corporate data base.

Army regulations require the development of an information architecture to ensure that automated systems will work with and not duplicate others. The information architecture is supposed to be the basic frame of reference for information management decisions and provides the basis for planning the logical transition from the current to the future information systems environment. However, as we reported in June 1990,¹ the Army has not developed an Army-wide information architecture. We also reported that architecture development had been hindered at all levels because the Army has neither exercised effective management nor provided adequate guidance to facilitate architecture development. Without an information architecture, the Army cannot ensure that information systems initiatives will fit into the architectural framework once it's developed.

Even with an Army-wide information architecture, meaningful data exchange among the systems supporting the Army's decision-making process could be jeopardized because the Army has made minimal progress in establishing data standards. In 1986, the Army Audit Agency reported² that the Service's lack of progress was attributable to ineffective policy and procedures, and that the data standardization program needed redirection. Although the Army revised its policy on data standardization in September 1989, it does not plan to publish guidance on how to implement the policy until November 1990.

Initiatives Are Not Based on Analysis of Need or Consideration of Economic Benefit

To ensure that automated systems meet mission needs at the lowest overall cost, federal and Defense policies require that system development efforts be justified by preliminary analyses. Specifically, federal information resources management regulations state that the acquisition of new or additional information processing resources shall be based on mission needs and supported by a requirements analysis prior to beginning system development. Army regulations require all organizations to develop an information architecture to identify all requirements for their information systems.

After the requirements analysis is completed, federal regulations require an economic analysis to identify the most cost effective

¹Information Resources: Army Should Limit New Initiatives Until Management Program Is Implemented (GAO/IMTEC-90-58, June 29, 1990).

²Army Data Element Standardization Program, Assistant Chief of Staff for Information Management, United States Army Audit Agency, (Report No. SW 86-203, March 28, 1986).

approach for developing an automated information system. DOD Instruction 7041.3, Economic Analysis and Program Evaluation for Resource Management, requires that proposals involving a choice between two or more alternatives include (1) a comparison of the total estimated cost/benefit of each alternative over its useful life and (2) all of the resources required to meet the stated objectives. Further, the instruction requires periodic comparisons between estimated and actual costs and benefits to determine the cost effectiveness of the system. Army regulations also require that the analysis be updated when assumptions of the original study change.

In developing the initiatives, the Army has failed to follow these required acquisition procedures and policies. Specifically, organizations controlling seven of the eight initiatives have not completed requirements analyses, prepared economic analyses, or tracked their total costs. The organization controlling the eighth initiative project plans to prepare requirements and economic analyses, but does not plan to track all of the initiative's equipment costs. Officials responsible for the initiatives generally told us that requirements analyses were not a priority. Further they did not believe that they were required to prepare economic analyses or track total costs. However, without such analyses, the Army cannot be sure that the initiatives are based on valid mission needs and represent the most cost effective solution or how much it may ultimately cost to develop the initiatives. Moreover, the Army does not know how much has been expended on the projects because it has not tracked their costs. The following table lists the initiatives and notes their compliance with the pertinent information systems policies and regulations.

Chapter 3
Army Management of Initiatives Lacks
Merits of a Centrally-Directed Program

Table 3.1 Project Compliance With Federal and Defense Acquisition Policies

Project	Requirements analysis	Economic analysis	Total costs tracked
Headquarters			
Decision support systems	No	No	No
Decision resources data base	No	No	No
Army management support network	No	No	No
Major Command			
TRADOC decision support systems	No	No	No
FORSCOM command data base	No	No	No ^a
Installation			
Army-wide installation support modules	Yes ^b	Yes ^b	No
TRADOC installation support modules	No	No	No
Fort Hood integrated data base	No	No	No

^aAlthough FORSCOM had not tracked total costs, the Command agreed to do so for the remainder of the project.

^bThe Army-wide Installation Support Modules Project Office plans to complete the requirements and economic analyses prior to beginning system development.

Headquarters Initiatives

The organizations controlling the three headquarters initiatives had not completed requirements determinations, prepared economic analyses, or tracked their costs. Although headquarters officials recognize that requirements analyses are needed, they told us that they have not been completed because the headquarters information architecture has not been completed. They told us that waiting for its development would have delayed individual systems development.

Further, while responsible headquarters officials told us that they did not believe an economic analysis was required for the systems, we did find a September 1988 cost/benefit analysis of the Headquarters Decision Support Systems. The analysis disclosed that headquarters had not prepared an overall economic analysis, and that organizations controlling the individual systems had not maintained reliable costs or determined whether tangible benefits had accrued. The Headquarters Decision Systems Management Agency agreed that an overall economic analysis was needed and that cost and benefit information on the individual systems was not available.

Additionally, Army headquarters officials did not know how much had been expended on the systems because the initiatives have been funded

by many different organizations and their total costs have not been centrally tracked. However, the September 1988 cost/benefit analysis estimated that for fiscal years 1988 through 1996 the headquarters decision support systems alone would cost over \$600 million.

Major Command Initiatives

TRADOC and FORSCOM have not completed requirements analyses or prepared economic analyses for their initiatives. Further, neither Command tracked the total costs for their initiatives. TRADOC officials stated that completing its information architecture or requirements analysis was not a priority until recently. In response to Department of Defense Inspector General and Army Audit Agency reports, the Command started to prepare the requirements analysis and plans to complete it in June 1990.

TRADOC officials also stated they did not believe they were required to prepare an economic analysis or track actual costs because the effort is a prototype. However, the Command's decision support systems effort goes well beyond the Army's definition of a prototype. Army regulations state that a prototype is used to evaluate a design or test aspects of a proposed production system involving high-risk technology. According to National Institute of Standards and Technology officials responsible for the Institute's guide on prototyping,³ TRADOC is developing a production system and not a prototype. In their opinion, TRADOC's prototype involves too many installations and is taking more time than needed to further define requirements or test aspects of a proposed system. Further, Command officials have not tracked all the costs for the effort because they have omitted some of the personnel and equipment costs needed to implement the proposed system.

Similarly, FORSCOM has not completed its requirements analysis, prepared an economic analysis, or tracked all the costs for its Command Data Base initiative. Command officials told us that they have not completed their information architecture or requirements analysis because they lack needed headquarters guidance. As we reported in June 1990,⁴ the Command has done significant work toward developing its architecture, but an official stated that they could not afford further investment

³NBS Special Publication 500-148, Application Software Prototyping and Fourth Generation Languages, National Bureau of Standards (now called the National Institute of Standards and Technology), May 1987.

⁴Information Resources: Army Should Limit New Initiatives Until Management Program Is Implemented (GAO/IMTEC-90-58, June 29, 1990).

without the overall architecture to guide them. FORSCOM officials also told us that they did not believe it was necessary to prepare an economic analysis or track total costs because the initiative was not a major program and had been justified in the Information Management Plan approval process. However, we determined that Army regulations require the analysis for projects of all sizes. Further, Army regulations do not permit organizations to substitute the Information Management Plan approval process for the analysis. During the course of our review, Command officials decided to prepare an economic analysis and track total costs for the remainder of the effort because they wanted to comply with the pertinent Army policies. The Command had not completed its analysis prior to the conclusion of our review.

Installation-level Initiatives

Only one organization controlling the three installation-level initiatives plans to comply with regulations for preparing requirements and economic analysis. Further, none of the organizations have fully complied with Defense policies on cost tracking—two have incomplete costs and the other one has not tracked costs at all.

The Army-wide Installation Support Modules Project office has initiated its requirements analysis and plans to conduct an economic analysis prior to system development. Although the Army-wide project office is tracking costs, it does not plan to include all of the costs associated with implementing the system. For example, the Army plans to install the modules at all 179 Army installations, but an undetermined number of installations may require upgrades to their computers to operate them. The Army plans to provide the needed upgrades through other programs and does not plan to identify the costs as part of the Installation Support Modules project.

TRADOC has not completed a requirements analysis, prepared an economic analysis, or fully tracked the costs for its Installation Support Modules initiative. TRADOC officials told us that the Command has not completed information architectures or requirements analysis for all of its installations because they were not priorities until recently. The Command plans to complete the analyses in June 1990.

Although TRADOC Decision Support Systems officials initially stated that the initiative did not require an economic analysis because it was a part of their prototype effort, they did provide us a 1987 cost/benefit analysis prepared by the Information Systems Command. However, the analysis did not include all equipment costs for the system. For example,

while the Command's installations have procured new data base management systems and operating systems for the Installation Support Modules system, the 1987 analysis did not address these costs. Additionally, the Command did not know the total cost of the system because portions of its development have been funded by many different organizations and not centrally tracked. For example, Fort Sill developed a major portion of the system but did not track its costs.

Fort Hood has not completed a requirements analysis, prepared an economic analysis, or tracked total costs for its Integrated Data Base. Fort Hood officials told us that the installation has not completed its information architecture or requirements analysis because it had not been a priority until recently.

Fort Hood officials also said they had not prepared an economic analysis because the type of data base management system being used has been proven in private industry. We do not agree with the installation officials' assertions because federal and Defense policies for automated information systems require that economic analyses address the activity to be automated—in this case, the installation. The regulations also require organizations to complete the analysis prior to beginning system development and conduct periodic reviews to determine the cost effectiveness of the approach selected. Additionally, installation officials stated that they did not track the total cost of the data base development because portions of it have been funded by the users.

Conclusions and Recommendations

Conclusions

Without regard for the 1986 congressional and Defense direction, the Army is continuing to develop an ad hoc corporate data base. Because this effort is not centrally directed or in compliance with pertinent federal and Defense policies, the Army cannot be sure that the systems it is developing are based on valid mission needs, will work together and not duplicate one another, or that a cost effective capability will be achieved.

We identified eight initiatives at the headquarters, major command, and installation levels that are intended to provide capabilities planned for the canceled project. The headquarters-level initiatives involve the development of a standard data base, an unknown number of decision support systems, and a long-distance communications system. The initiatives at the major command and installation levels primarily involve the development of standard data bases. Our work was limited to initiatives at Army headquarters, two major commands and selected installations; other organizations also may have projects pursuing the objectives of the canceled project.

We also found that the initiatives lack the merits of a centrally-directed program. Specifically, we found that the initiatives lack central direction and guidance because the Army has not established a program office, completed its information architecture, or fully implemented its data standardization program. Without a program office or information architecture, the Army is not sure that the initiatives will work with and not duplicate others. The Army also is not sure that the initiatives will be able to exchange data useful to Army decision-makers because it has not fully implemented a data standards program, which is intended to eliminate conflicting and inaccurate data.

Additionally, although federal and Defense policies for automated information systems call for formal requirements determinations and economic analyses prior to beginning system development, organizations controlling seven of the eight initiatives had not complied with these policies. The organization responsible for the eighth initiative plans to comply. Therefore, the Army lacks assurance that the initiatives are based on valid requirements. The Service also does not know whether the most economical approach has been selected or how much it may cost to develop the initiatives. In addition, the Army did not know how much has been spent on the initiatives because the organizations controlling them have not fully tracked costs.

Recommendations

We recommend that the Secretary of Defense direct the Secretary of the Army to suspend development activity on the eight initiatives we identified, and not to resume any of them unless all required federal and Defense acquisition requirements are met. This would include preparing mission needs statements and requirements and economic analyses.

In addition, we recommend that the Secretary of Defense direct the Secretary of the Army to prohibit funding for any other initiative the purpose of which is to achieve a corporate data base capability, until the Army adequately justifies to the Office of the Secretary of Defense and the Congress the mission need and potential economic benefit of an Army-wide corporate data base.

Agency Comments

At the Chairman's request, we did not obtain official agency comments on a draft of this report. However, we did discuss the results of this review with agency officials and they agreed with the facts presented.

Major Contributors to This Report

**Information
Management and
Technology Division,
Washington, D.C.**

Thomas J. Howard, Assistant Director
Wiley E. Poindexter, Evaluator-in-Charge
M. Scott Laemmle, Evaluator

**Atlanta Regional
Office**

Carl L. Higginbotham, Regional Assignment Manager
Christopher T. Brannon, Evaluator

**Norfolk Regional
Office**

Joseph J. Watkins, Regional Management Representative
Suzanne K. Wren, Evaluator

Requests for copies of CAO reports should be sent to:

U.S. General Accounting Office
Post Office Box 6015
Gathersburg, Maryland 20877
Telephone 202-275-6241

The first five copies of each report are free. Additional copies are \$2.00 each.

There is a 25% discount on orders for 100 or more copies mailed to a single address.

Orders must be prepaid by cash or by check or money order made out to the Superintendent of Documents.

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

**Official Business
Penalty for Private Use \$300**

**First-Class Mail
Postage & Fees Paid
GAO
Permit No. G100**
