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STRATEGIC PLAN

Information Management and Technology Issue Area Plan



Memorandum

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To: Program Planning Committee

Through: Director, Office of Program Planning

From: Director, IMTEC - *Ralph V. Carlone*

Subject: Information Management and Technology Issue Area Plan

The last information management and technology issue area plan, covering fiscal years 1987 through 1989, was approved in April 1986. Since that time, many of our recommendations, aimed at improving the management and procurement of computer and telecommunications resources, have had an impact at several agencies, including the Department of Defense, Internal Revenue Service, and Social Security Administration. We have not, however, made the significant contributions to governmentwide information resources management that we had envisioned. Our proposed plan for fiscal years 1989 through 1991 presents a revised focus and approach for the information management and technology issue area.

Focus of the Plan

In our plan, we will continue to evaluate central agencies' oversight of governmentwide information resources management. However, our strategy is to commit fewer resources to this issue for two principal reasons:

- We are continuing to refine our strategy for the area. To help us determine the scope and approach for this issue, we met with numerous experts to solicit input on the critical information resources management problems facing the government. Our strategy is to begin to examine the extent of these problems and comment on the adequacy of central agencies' actions in addressing them.
- We can more efficiently address information management and technology issues by (1) reviewing more high-cost information technology initiatives at the agency-specific level and (2) using our agency-specific findings and insights to identify and evaluate cross-cutting governmentwide issues.

In performing our agency-specific work, our intent is to complement programming divisions' issue areas by deliberately structuring assignments

with an appropriate mix of technical and evaluative skills. In this way, we can better focus on both the managerial and technical aspects of relevant information technology issues. Our focus for agency-specific work will continue to include the tax policy and administration, income security, health delivery and quality of care, and transportation areas. We are proposing to significantly expand our work in the Defense automated information systems and the space and space-related technology areas because of the high amount of projected federal spending and increased congressional interest.

Planned Approach

This plan also proposes a different approach for addressing the information management and technology issue area. Our last plan had one governmentwide issue and three issues for agency-specific work. While feasible, this approach did not clearly specify where we were performing our work and did not facilitate coordination among GAO managers. As a result, we are proposing a modified approach. We intend to continue to pursue, at a reduced level, one governmentwide issue and address six agency-specific issues that complement other GAO issue areas. In addition, we will perform developmental work in four issue areas and continue work in our target of opportunity.

We believe our modified approach over the next 3 years will offer two major benefits. First, we have determined that identifying agency-specific issues provides a clearer track of where we are planning to do our work. This specificity allows for better accountability when measuring our performance against the issue area plan. Second, we believe this approach will facilitate an ongoing, informed dialogue with the program divisions. By using our proposed issues as a backdrop, this plan permits us to more effectively coordinate with managers from the other divisions to ensure that IMTEC identifies and addresses the most important computer and telecommunications issues facing the government.

INFORMATION MANAGEMENT AND TECHNOLOGY

Issue Area Plan
Fiscal Years 1989–1991

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Overview

Computer systems and telecommunications technology continue to radically transform our national defense strategy, allow us to explore space, and rapidly change the government's approach to gathering and using information. Our growing reliance on information technology within the federal government emphasizes the need to focus the attention of department and agency leadership on the effective and efficient management of information resources. The information management and technology issue area focuses on the acquisition and management of information resources—hardware, software, data, and people. Information management and technology offers enormous promise in improving government management and services and, in turn, improving service to the public. Effectively acquiring and managing these resources is critical to achieving the goals of nearly every government program or mission.

Federal spending for information technology has significantly increased in the last several years. Since 1984, fiscal obligations for computer technology have grown by nearly 50 percent, in contrast to the entire federal budget, which has grown by only 16 percent over the same period. During a period of budget cutbacks and deficit reductions, the Office of Management and Budget projects that spending for information technology will exceed \$17.3 billion in fiscal year 1988, an 8 percent increase from fiscal year 1987. Assuming the increase continues at this rate over the next 3 years, federal obligations for information technology could reach \$22 billion in fiscal year 1991.

Responsibilities for information management and technology within the federal government generally reside at two levels. Formulating policies, procedures, and standards and monitoring executive agencies' information resources activities are the responsibility of the "central agencies." These agencies include the Office of Management and Budget, General Services Administration, Office of Personnel Management, and the Department of Commerce's National Bureau of Standards. Executive agencies are responsible for acquiring, managing, and using their information systems to efficiently and effectively achieve mission or program goals.

Our issue area plan addresses both of these levels of responsibility. During fiscal years 1989 through 1991, we plan to examine the governmentwide effectiveness of central agencies' oversight of executive agencies' information management activities. We will also continue to assess, in our agency-specific work, the individual executive agencies' acquisition and management of computer and telecommunications

resources. We plan to focus primarily on seven issues—one governmentwide and six agency-specific—that we believe can provide the greatest contribution towards improving information management within the federal government.

The governmentwide issue is:

- How effectively are the central agencies carrying out their governmentwide information resources management functions?

Of the six agency-specific issues, two are considered primary—complementing more than one issue area—and four are issue area-specific. The two primary issues are:

- Is Defense effectively and economically developing and acquiring its automated information systems?
- Are the Defense and the National Aeronautics and Space Administration effectively developing and operating information technologies to meet military and civilian needs in space?

Our four issue area-specific issues are:

- Are the Internal Revenue Service's information processing resources—hardware, software, data, and people—adequately planned for, acquired, and used?
- Is the Social Security Administration effectively and economically managing its information resources to satisfy mission needs?
- Are Defense's and the Veterans Administration's acquisitions of automated medical systems meeting user needs in a cost-effective manner?
- Will the Federal Aviation Administration's planned information and communications systems effectively satisfy mission requirements?

We selected four additional agency-specific issues that are developmental in nature and will require further work before we can decide whether a comprehensive strategy is warranted. These issues complement four GAO issue areas: financial services and markets, health financing, food and agriculture, and natural resources management.

To respond to unanticipated congressional interest, we established a congressional response group to react in a timely manner to requests in areas where work was neither ongoing nor immediately planned. Work in the Department of Justice information systems area is our target of opportunity. Because of the diversity of the Justice area and our limited resources, we plan to continue to provide the Congress with information technology assessments on selected Justice activities. Our plan also includes an ongoing commitment to Financial Integrity Act efforts and GAO's general management reviews.

Over the next 3 years, we anticipate providing recommendations that will help to promote more efficient, effective, and economical use of information technology. Specifically, we plan to issue reports that begin to address significant cross-cutting, governmentwide information technology problems and recommend ways to improve the government's attention to these problems. In our six agency-specific issues, we envision issuing individual reports to address the pertinent information technology concerns and identify potential budgetary savings. We also plan to issue capping reports in four of our issues. For example, we plan to issue a capping report by the summer of 1991 addressing the Internal Revenue Service's Tax System Redesign.

Plan Development

The following is a discussion of the planning process and the significant factors we considered in prioritizing our information management and technology issues.

Coordination

In developing our issue area plan, we consulted with officials outside of GAO and continued to maintain an extensive, ongoing dialogue with GAO program divisions and key regional offices. To establish a foundation for our governmentwide issue, we met with 16 information resources management experts to gain their perspective on the critical issues facing the government's application of information resources. (See app. I.) These experts represented the public and private sectors, academia, civilian and military agencies, and executive and legislative branches. During these meetings, we collected views on the (1) significance of the problems affecting various information technology issues, (2) operational effects of these problems, (3) extent of these problems governmentwide, and (4) possible solutions to address the problems. Our analysis of this information helped us formulate four governmentwide questions related to telecommunications, systems development, contract management, and information technology personnel, that we intend to address over the next 3 years.

To formulate our plan for the agency-specific issues, we consulted with GAO program divisions and obtained input from key regional office staff. For many of the issue areas, IMTEC managers attended issue area planning conferences and meetings. The input from nine GAO regional offices helped us to prioritize the more critical reviews.

For most of our issues, we maintain an ongoing dialogue with the cognizant committees and subcommittees to ensure that we are meeting the needs of the Congress. In developing this plan, we held further discussions with committees and sought their views on information technology issues they deem to be of greatest concern. In addition, we coordinated with officials from the Congressional Research Service, Office of Technology Assessment, and Congressional Budget Office, and the House and Senate information technology managers.

Significant Factors Considered

To ensure that our limited resources are focused on the most significant information technology issues, we considered various factors in selecting the governmentwide and agency-specific issues to pursue over the next 3 years. Specifically, we considered the influence of legislation and the Administration, the degree of congressional interest, the potential

for influencing cost savings, and the extent to which our work complemented the respective GAO issue areas.

The Paperwork Reduction Act of 1980 continues to dictate the government's role in information resources management. This act was the primary impetus for Office of Management and Budget Circular No. A-130, which provides a general policy framework for implementing and improving information resources management. The Paperwork Reduction Reauthorization Act of 1986 expanded the definition of automated data processing equipment to include services and telecommunications. This legislation has further expanded and clarified the central agencies' role in effectively managing information technology. Therefore, we must continue to evaluate the effectiveness of the central agencies' oversight of information resources management.

The Administration, in recognizing the growing importance of information technology, has begun to increase its attention on planning for this area. Designating large, complex, and important information systems as Presidential Priority Systems is a recent initiative, intended to provide the Administration with further oversight of key systems. The Administration has recently identified 15 systems to receive high-level management review during fiscal year 1989 to ensure that they are brought up to private industry standards. Over the next 3 years, we plan to review six of these systems. (See app. II.)

Given that information technology affects almost all federal agencies, nearly all congressional committees and subcommittees have an interest in our issues. In the past, both House and Senate committees have requested that we examine design, integration, and acquisition issues related to major multibillion dollar information system developments and enhancements. Over the next 3 years, we anticipate congressional interest in our agency-specific issues to be high. For example, several committees are interested in our evaluations of the Federal Aviation Administration's implementation of the National Airspace System plan and of the upcoming acquisition decisions facing Defense and the Veterans Administration.

The potential for influencing cost savings is also high and exists for almost all our agency-specific work. Billions of dollars will be spent to design, develop, and acquire these information management systems. In fiscal year 1987, we had nearly \$400 million in measurable cost savings.

Over the next 3 years, we anticipate identifying and reporting significant cost savings as agencies such as Defense and the Internal Revenue Service acquire large automated information systems.

Information management and technology issues are an important aspect of the majority of GAO issue areas. In many of these areas, information management systems are the "means" that agencies depend on to perform their missions. In recognizing this relationship, we believe that the work planned over the next 3 years under our agency-specific issues not only fully supports our information management and technology issue area, but complements other GAO issue areas through our focus on more technical evaluations. For example, most of the work planned in our transportation issue will be the technology assessment for GAO's response to the Congress on the implementation of the National Air-space System plan.

Resource Requirements and Issues Identified

The table below summarizes the proposed staff year requirements for our information management and technology issues for fiscal years 1989, 1990, and 1991. A discussion of our issues and planned developmental work follows this table.

Table 1: Information Management and Technology Resource Requirements

Issues	Staff Year		
	1989	1990	1991
Governmentwide	20	26	32
Defense Automated Information Systems	51	55	59
Space and Space-Related Technologies	44	44	44
Tax Policy and Administration	31	31	31
Income Security	12	12	12
Health Delivery and Quality of Care	20	15	10
Transportation	18	18	18
Developmental work			
Financial Markets and Services	13	15	17
Health Financing	8	9	9
Food and Agriculture	10	10	10
Natural Resources Management	10	10	10
Other issue area work			
Unanticipated Congressional Requests	14	14	14
Target of Opportunity—Department of Justice	12	12	12
Other work not directly related to issue area^a	18	18	18
Total	281	289	296

^aIncludes 8 staff years for Financial Integrity Act and 10 staff years for general management review work for fiscal years 1989-1991.

Governmentwide

How Effectively Are the Central Agencies Carrying Out Their Governmentwide Information Resources Management Functions?

Significance of Issue

The success of many government programs and missions is directly related to the successful development and management of information technology. Unfortunately, many computer systems are neither efficient nor effective in supporting mission objectives. This situation exists, in part, because telecommunications and computer technology has developed at a far faster pace than has the government's ability to effectively use it. In other cases, new technology is being introduced without a full understanding of its best uses or potential.

While the management of information technology is typically performed at the executive agency level, the central agencies have key governmentwide responsibilities that affect executive agencies' ability to benefit from information technology. For example, the Office of Management and Budget provides overall leadership in managing and coordinating federal information resources management, while the General Services Administration develops guidance for purchasing information technology and buys and manages governmentwide telecommunications networks. Other central agencies monitor the government's personnel and staffing requirements and support the development of central information resources management policy.

Recent studies conducted by the President's Private Sector Survey on Cost Control, the Office of Technology Assessment, and the National Academy of Public Administration, and our previous and ongoing work, have identified problems that contribute to the government's difficulties in effectively using telecommunications and computer technology. These problems adversely affect the development, acquisition, management, and use of telecommunications and computer resources. In our previous and ongoing work, we have determined that these problems exist at numerous executive agencies such as the Departments of Justice and Commerce, and found that, in many cases, existing governmentwide policy and guidance to address these problems are inadequate.

Statement of Objective

Our overall objective is to determine whether central agencies are providing effective oversight of executive agencies' information resources management activities. Based on our previous and ongoing work, we have identified four management questions that are critical to the government's ability to make use of technology:

(1) Is the federal government acquiring and using telecommunications technology in an efficient, cost-effective manner?

(2) Does the federal government develop and modernize information systems in a timely, cost-effective manner?

(3) Is the federal government limiting information technology costs through effective contract management?

(4) Can the federal government attract and retain the information technology personnel needed to improve operations and service through increased automation?

Strategy Statement

Given our foundation in the telecommunications area and its criticality within the federal government, we plan to concentrate our efforts on the telecommunications question. Our strategy is to examine, at the executive agency level, the common problems in defining requirements, acquiring services and equipment, and managing telecommunications facilities. We will then determine from our reviews at several individual agencies the governmentwide impact of central agency performance in regulating telecommunications. This work could then provide the basis for recommending improvements in central agency guidance and standards.

For each of the remaining three questions—systems modernization, contract administration, and personnel—we plan, before committing extensive resources, to conduct small building block assignments to identify the roles and responsibilities of the central agencies and assess the adequacy of their efforts at the executive agency level. Depending on the question under consideration, our strategy involves (1) performing work to more precisely define the question, (2) evaluating central agency policies and oversight activities, and (3) analyzing individual agency practices relative to existing guidance. We will obtain information on the individual agencies by either specifically initiating an assignment, using results of recently completed work, or ideally, adding steps to ongoing agency-specific reviews.

Anticipated Results

We plan to issue a series of reports to summarize segments of each question. Specifically, these reports will address the effectiveness of information resources management practices of individual executive agencies

as well as central agencies' oversight. If appropriate, we will issue capping reports for each question that will offer recommendations to improve the governmentwide application of information technology. We believe that the potential improvements we recommend could enhance the individual agencies' ability to more efficiently and effectively use technology to support mission operations.

Defense Automated Information Systems

Is Defense Effectively and Economically Developing and Acquiring Its Automated Information Systems?

Significance of Issue

Defense spends in excess of \$8.3 billion annually to acquire, develop, maintain, and operate its automated information systems that support military functions such as supply and maintenance, technical data, and manpower management. Approximately 75 percent of this annual expenditure is in support of logistics programs. Large investments are ongoing or planned to modernize the computer-aided logistics support environments in the Departments of the Army, Navy, and Air Force, and the Defense Logistics Agency. The expected life-cycle costs associated with these systems exceed \$80 billion. One of these systems, the Defense Logistics Agency's Logistics Modernization Program with a life cycle cost of \$2.8 billion, is a Presidential Priority System.

Historically, Defense has experienced problems in acquiring and developing large automated information systems. Many of these systems far exceeded their original cost estimates, became operational later than scheduled, and fell significantly short of originally approved performance expectations.

Our past work has resulted in improvements in Defense's management of selected major systems development efforts. For example, in evaluating the Air Force's logistics systems modernization projects, we determined that the Air Force was not adequately defining the projects' benefits and that no mechanisms existed to measure the achievement of the operational systems. While it is difficult to measure the dollar effect of this type of work, early identification of system planning and design problems have helped Defense minimize cost growth and thus resulted in significant cost avoidances.

Statement of Objective

Our primary objective is to determine whether Defense is effectively and efficiently developing and acquiring its automated logistics systems by focusing on the two elements of logistics systems automation that involve the largest investments—supply support and maintenance management. Our secondary objective is to determine whether Defense budget requests for automated information systems are justified. To complement these objectives, we plan to report on systemic Defense problems uncovered during our information systems reviews. We also

expect to do work in response to requests to support the program divisions' work.

Strategy Statement

To accomplish our primary objective, our strategy is to examine the military services' and the Defense Logistics Agency's major automated information systems in the supply support and management areas to determine whether (1) requirements are defined in a way that will allow known deficiencies to be corrected, (2) engineering principles are being properly applied to systems designs, and (3) acquisition strategies are reasonable. To address the secondary objective, we will annually review the automated information systems involving the largest costs, analyze their current status in conjunction with the annual fiscal year budget requests, and provide our analysis to the appropriations committees in time for budget hearings and mark-up sessions. Regarding systemic issues, we plan, based on observations to date, to initially pursue the issue of insufficient development of systems requirements. We plan to issue an overall report on this issue in the spring of 1991.

Anticipated Results

We anticipate that our work will result in more effective and efficient development and acquisition of Defense automated logistics systems. Specifically, our recommendations should bring about improvements in defining systems requirements, designing systems, and implementing acquisition procedures. The goal of our budget analysis work is to identify management problems in systems development and acquisition, and to annually develop suggested funding reductions on the basis of identified systems deficiencies. The results of all this work will be used to issue not only reports on individual systems, but also reports summarizing the significant problems we identify and their implications for Defense's systems development and acquisition policies and procedures.

Space and Space-Related Technologies

Are Defense and the National Aeronautics and Space Administration Effectively Developing and Operating Information Technologies to Meet Military and Civilian Needs in Space?

Significance of Issue

The United States has exploited space for scientific, commercial, and military purposes, particularly in the areas of communications, navigation, and surveillance. The use of space as a national resource is rapidly expanding with the commitment to developing a permanent, manned space station and the increasing dependence of our military forces on space systems for vital command, control, and communications support. Congressional sources have projected that more than \$125 billion may be spent on computers and telecommunications for space and space-related programs over the next 4 years—more than \$35 billion by the National Aeronautics and Space Administration and over \$90 billion by Defense.

The size, complexity, cost, and problems of systems development projects have increased dramatically in recent years. The Defense Science Board Task Force on Military Software cited project delays, design flaws, and misjudgments in requirements as the common problems affecting the development of large, complex automated systems.

Statement of Objectives

Our overall objectives are to determine whether (1) Defense and the National Aeronautics and Space Administration can effectively manage large-scale systems engineering and integration; (2) Defense's and the National Aeronautics and Space Administration's key ground control centers can provide sufficient computing capacity and reliability to support anticipated launch schedules; and (3) Defense's base of development experience will adequately support a full-scale development decision on the Strategic Defense Initiative's battle management software. In addition, we will begin to address questions related to systems designs for major, long-lived defense and civilian space systems and for mobile computing technology.

Strategy Statement

In the past, we have pursued a system-by-system approach in the space and command, control, and communications areas. Although we have provided technical information on individual systems that complemented the associated GAO issue areas, we have not been in a position to comprehensively answer important technology issues. Over the next 3

years, we plan to expand our approach in this area by focusing on the three cross-cutting technical questions that we believe are most important. These questions relate to large-scale systems engineering and integration, computing capacity and reliability, and space defense. Specifically, we will perform a series of interrelated reviews that will allow us to answer these questions as well as provide important system-specific performance and cost information to the Congress.

To address the large-scale systems engineering and integration question, we plan to complete a series of reviews of selected high-cost, high-risk subsystems within each of three major systems—the North American Air Defense Command's (NORAD) Tactical Warning/Attack Assessment system, the Army's Command and Control System, and the National Aeronautics and Space Administration's Space Station Information System. Regarding the question of whether key ground control centers can provide sufficient capacity and reliability, our strategy is to build on completed work related to the performance limitations of old technology and conduct further work on space operations and satellite control facilities. We plan to use our developmental efforts on new computing technologies to build a foundation for our third question related to the Strategic Defense Initiative. From this, we will begin our assessment of the battle management software development and systems engineering efforts for the Strategic Defense Initiative and comment on the feasibility and risks inherent in a full-scale development decision.

Anticipated Results

We believe that by following this expanded approach, we can expect three-fold results. First, we can reasonably expect, given that our focus is on multibillion dollar, long-term development efforts, to annually provide information to the Congress on potential budget reductions. Second, after completing a series of related reviews for each question, we expect to issue capping reports that recommend changes to the major programs or systems that will improve management, reduce development risks, and potentially reduce long-term development costs. Finally, our work on the ground control centers and Strategic Defense Initiative issues will be a major contribution to the program divisions' efforts in these areas.

Tax Policy and Administration

Are the Internal Revenue Service's Information Processing Resources—Hardware, Software, Data, and People—Adequately Planned for, Acquired, and Used?

Significance of Issue

The Internal Revenue Service is becoming increasingly dependent on computer and telecommunications systems to process about 188 million tax returns annually and ensure that the nation's tax laws are administered efficiently and effectively. The Internal Revenue Service's budget reflects its dependence on computer technology with its fiscal year 1989 budget request approaching \$1 billion, about 20 percent of its entire budget request.

As a result of its Tax System Redesign initiative, the Internal Revenue Service is redesigning its entire automated tax processing system through the mid to late 1990s. The current tax processing system is now outdated and hampers the agency's ability to service taxpayers. The Tax System Redesign, a multibillion dollar Presidential Priority System, is intended to improve the Internal Revenue Service's ability to process returns, make refunds timely, and maintain taxpayer accounts accurately in the face of an increasing tax administration workload. The Internal Revenue Service also plans to continue to make changes to its computer and telecommunications systems for tax years 1988 and 1989 to implement the requirements of the Tax Reform Act of 1986.

Our past and ongoing work has uncovered significant systems and management problems. We have addressed such issues as the Internal Revenue Service's ineffectiveness in (1) developing and installing new computer systems; (2) defining information processing and telecommunications requirements; and (3) assessing the performance of its current computer systems and estimating its future needs.

Statement of Objective

Our objective over the next 3 years is to assess how well the Internal Revenue Service manages—plans for, acquires, and uses—its information processing resources to support the tax administration program. Our primary focus is to determine whether implementation of the Tax System Redesign will be successful. To the extent possible, we will also address whether the Internal Revenue Service's major automated systems effectively support tax administration and related activities.

Strategy Statement

In determining whether the Internal Revenue Service is adequately managing its redesign effort and information resources, we will conduct reviews that involve the development, acquisition, and installation of computer systems. To accomplish our primary objective, we intend to perform a series of reviews to evaluate the technical adequacy, feasibility, and managerial soundness of the plans and strategies for the Tax System Redesign. To help determine the most efficient and effective strategy to evaluate the Tax System Redesign, we plan to convene a panel of five or six recognized experts. Three of these experts will be high-level officials with experience in directing major redesign efforts. The remaining experts will have a combination of tax, management, technical, academic, and federal and state government experience. We will also conduct a few assignments to determine whether the Internal Revenue Service's major automated systems effectively support tax administration and related activities.

Anticipated Results

We anticipate that our work will result in improvements in the Internal Revenue Service's management and use of its information technology resources. By focusing on the technology, feasibility, and managerial soundness of the Tax System Redesign, we anticipate making recommendations in our reports that will correct technical and managerial weaknesses and help ensure that systems are introduced that better meet identified needs. We anticipate issuing a capping report in the summer of 1991 that will point out both the positive and negative aspects of the Tax System Redesign, as well as provide recommendations for implementing it successfully. This report may be useful to agencies about to embark on a major system redesign.

Income Security

Is the Social Security Administration Effectively and Economically Managing Its Information Resources to Satisfy Mission Needs?

Significance of Issue

The Social Security Administration operates one of the largest civilian automated data processing system complexes in the world. The agency's numerous computer systems service over 41 million beneficiaries, with annual benefits paid in excess of \$205 billion. In 1982, the Social Security Administration reported that these computer systems were close to collapse, difficult to maintain, and deficient in both hardware and software. As a result, it proposed a 5-year Systems Modernization Plan to improve its data processing operations. Because of schedule delays and unrealistic milestones, the modernization project will continue into the 1990s. The project's fiscal years 1986 through 1991 funding needs total almost \$850 million. Because of the project's size, complexity, and sensitivity, it is a Presidential Priority System.

Our past and ongoing work has found numerous and significant systems problems, including deficient software, insufficient technical integration, unjustified procurements, and inadequate maintenance of the existing systems. Much of this work contributed to our April 1987 report¹ that concluded that while the Social Security Administration had made progress and realized operational improvements by acquiring new and larger computer equipment, it had not met its objectives of modernizing its software and implementing an integrated data base. In response to our work, the Commissioner of the Social Security Administration acknowledged that the modernization effort needed to be redirected. As a result, the agency is revising its plan and performing a baseline analysis to identify and prioritize systems deficiencies.

Statement of Objective

Our objective is to evaluate all major areas of the Social Security Administration's information resources. We will concentrate our efforts on determining whether the agency can effectively and efficiently operate and maintain its existing systems and adequately plan and implement its revised modernization program.

Strategy Statement

We will conduct several separate but coordinated reviews of the agency's existing systems and the development and implementation of the revised modernization program. Specifically, we will determine if

¹ADP Systems: SSA's Modernization Efforts Need Redirection (GAO/IMTEC-87-16, Apr. 10, 1987).

the agency is identifying, evaluating, and correcting critical deficiencies in its existing systems, and properly operating and maintaining these systems while the modernization effort proceeds. We will also determine if the Social Security Administration is adequately updating its revised systems modernization plan and successfully implementing the plan, particularly in the areas of software development and field office automation.

Anticipated Results

Over the next 3 years, we will continue to issue reports that recommend ways the Social Security Administration can more efficiently and effectively operate and maintain its existing systems. In the spring of 1990, we anticipate issuing an overall report, similar to our April 1987 report, which will summarize the Social Security Administration's progress in implementing its revised modernization plan. Our work in this area should help the Social Security Administration (1) improve existing systems deficiencies, (2) establish controls to ensure that only manageable and necessary modernization efforts are undertaken, and (3) better manage its modernization efforts and information systems activities. We expect that millions of federal dollars could be saved as these controls and management activities are improved.

Health Delivery and Quality of Care

Are Defense's and the Veterans Administration's Acquisitions of Automated Medical Systems Meeting User Needs in a Cost-Effective Manner?

Significance of Issue

Defense and the Veterans Administration are in the midst of separate yet related procurements for their automated medical information systems. These systems are critical to the efficient delivery of health services. Defense is acquiring and testing a contractor-developed system, while the Veterans Administration plans to expand its existing in-house developed system. Implementation of both systems will likely total over \$2 billion. Defense plans to choose an automated health care information system in late 1989, while the Veterans Administration anticipates making a critical decision on its expansion effort in early 1990.

Both strategies are under intensive congressional scrutiny. The Defense Authorization Acts for fiscal years 1985 through 1988 directed GAO to report on various aspects of Defense's activities. The House Committees on Veterans' Affairs, Armed Services, and Appropriations have expressed interest in both Defense's new system and the Veterans Administration's planned expansion. In response to these interests, we have issued numerous reports on these activities, in addition to testifying on Defense's acquisition strategy.

Statement of Objective

Our overall objective is to determine whether Defense and the Veterans Administration have made sound investment decisions regarding their automated medical information systems. Our primary focus is to evaluate whether (1) the acquisition and testing of Defense's contractor-developed system and the Veterans Administration's system were fair and competitive and (2) Defense's system requirements could be reduced without adverse impact. We also plan to assess the adequacy of the Veterans Administration's planning and execution of its system expansion effort. In this regard, depending on the outcome of Defense's acquisition, we plan to assess the feasibility and benefits of the Veterans Administration adopting Defense's system.

Strategy Statement

To accomplish our objective, we plan to conduct separate, but integrated reviews of Defense's and the Veterans Administration's automated medical information systems. Specifically, our strategy is to evaluate the fairness and competitiveness of Defense's acquisition and testing

processes, as well as examine its system requirements and determine whether the requirements can be reduced at no detriment to mission fulfillment. Regarding the Veterans Administration, we will build on prior work to continue to evaluate the system expansion effort.

Given the timing of the decisions to be made by Defense and the Veterans Administration (1989 and 1990, respectively), fewer resources will be needed in fiscal years 1990 and 1991 for this issue. However, depending on the Veterans Administration's decision in 1990, we may need to perform additional work.

Anticipated Results

While we do not envision a capping report for this area, we will develop a report, as mandated by the National Defense Authorization Act for Fiscal Years 1988 and 1989, documenting our position on whether Defense followed a reasonable process and had adequate information to make its investment decision. We plan to consolidate into a summary assessment our prior work on the Veterans Administration's information resources and expansion efforts. This assessment will be updated annually based on our evaluations of the Veterans Administration's system expansion.

Transportation

Will the Federal Aviation Administration's Planned Information and Communications Systems Effectively Satisfy Mission Requirements?

Significance of Issue

The Federal Aviation Administration operates the largest automated air traffic control system in the world. Its air traffic control system includes numerous types of data processing systems such as en-route, terminal, and communications computer systems. In 1987, its en-route computer systems serviced over 35 million aircraft operations and the terminal computer systems serviced more than 60 million operations. Aircraft operations are expected to grow 42 percent by the year 2000.

In 1980, the Federal Aviation Administration developed a 10-year National Airspace System plan to modernize its computers, communications, and facilities. This modernization decision was made in part because of system hardware and software deficiencies. The National Airspace System plan calls for a \$16 billion investment to replace obsolete equipment with modern equipment capable of meeting air traffic control requirements into the next century. At the center of this modernization is the \$5 billion Advanced Automation System, which is planned to support the entire air traffic control system. Because of the system's size, sensitivity, and new precedent-setting applications of technology, it is a Presidential Priority System acquisition.

Statement of Objective

Our overall objective during the next 3 years is to determine if the Federal Aviation Administration is effectively developing systems and reasonably identifying and managing technical risks, in accordance with the National Airspace System plan. In addition, we will determine whether the Federal Aviation Administration is adequately testing these systems to ensure that they will meet and reliably support current and future air traffic control requirements. We plan to refine our overall objective after further discussions with program division managers.

Strategy Statement

To accomplish our objective, we plan to (1) identify and evaluate problem areas uncovered during systems development, (2) assess the effectiveness of the efforts made to identify and reduce risk, and (3) evaluate the effectiveness of test and evaluation processes for systems developed under the National Airspace System plan. In particular, we intend to focus on the progress being made to develop the costly Advanced Automation System and its potential impact on the successful execution of the National Airspace System plan.

Anticipated Results

We anticipate that our work will result in improvements to strengthen the Federal Aviation Administration's management and development of reliable computer and communications systems for the National Airspace System plan. We envision issuing an overall capping report on the information technology issues of the National Airspace System plan in the spring of 1991. From our work, we will be in a position to respond to congressional concerns on whether the agency is clarifying requirements, identifying and reducing technical risks, and performing sufficient tests and evaluations before placing systems into operation.

Developmental Work

We intend to perform developmental work in four GAO issue areas: financial services and markets, health financing, food and agriculture, and natural resources management. We have determined that information management and technology is a critical aspect of each of these areas. However, because our work to date in these information technology issues is preliminary, we have not formulated comprehensive strategies that would allow us to comment on the overall acquisition, use, and management of information systems.

Financial Services and Markets

We have intended to develop the financial services and markets issue for some time. However, primarily because of unanticipated congressional requests, we have been unable to proceed as planned. We have completed a limited amount of work in the issue—most notably on the role computers played in the October 1987 stock market crash—and have recently initiated two surveys to develop a comprehensive understanding of the information technology issues in this area.

The scope of this issue is immense. The nation's financial institutions provide the mechanism for channeling funds from savers to borrowers and trading securities. Trillions of dollars annually flow through these financial institutions via computers and telecommunications. Numerous other government and quasi-government organizations comprise the financial services area. From our two surveys, we intend to develop a knowledge base of information technology issues that have an impact on the financial services industry and its regulators, and select one or more of these issues for further review. If appropriate, we will construct a long-term strategy for conducting follow-on reviews.

Health Financing

As a result of our initial survey work, we have identified potential information technology concerns in the health financing area. Through the use of about 100 contractors, state Medicaid agencies, and the Social Security Administration, the Health Care Financing Administration processes health claims for Medicare and Medicaid recipients. The Health Care Financing Administration is also responsible for overseeing and partially reimbursing states and contractors for acquisitions of new information processing systems. These reimbursements were over \$600 million in fiscal year 1987. Our survey indicates that the Health Care Financing Administration has allowed states to modify and enhance their systems with little oversight and evaluation, and that potential problems exist in the agency's internal system redesign effort. Over the

next 3 years, we intend to focus on these two aspects and, if appropriate, develop a strategy to address the health financing area.

Food and Agriculture

The Department of Agriculture, having the sixth largest civilian agency budget for information technology, plans to spend nearly \$600 million in this area in fiscal year 1988. One of Agriculture's information technology projects involves upgrading the Farm Agency Service System by automating over 5,000 Soil Conservation Service, Farmers Home Administration, and Agriculture Stabilization and Conservation Service field offices. This project, estimated to cost \$465 million, was a fiscal year 1988 Presidential Priority System.

We are developing a knowledge base of information technology concerns and have begun analyzing their impact on the condition of the nation's food and agriculture programs. We have begun to develop a long-range strategy that will allow us to assist Agriculture in improving the effectiveness of its computer support.

Natural Resources Management

The Department of Interior is charged with managing and protecting the nation's natural resources. In fiscal year 1988, the Interior Department plans to spend about \$400 million for information management and telecommunications equipment and services. Interior's Automated Land and Mineral Record System, designed for the management of 343 million acres of public land and estimated to cost \$240 million, is a Presidential Priority System.

Our objective is to obtain a basic understanding of Interior's information resources management activities and then prioritize the work that we should pursue. Specifically, we plan to concentrate our work on Interior's major information systems, such as the Bureau of Land Management's Automated Land and Mineral Record System and the Minerals Management Service's Royalty Management System, identify weaknesses in these systems, and determine the impacts these weaknesses have on the agency's ability to manage its programs. Our coordination with the program division in developing this area should result in a focused approach to address royalty management issues.

Other Issue Area Work

Past experience has demonstrated that we need to devote some of our resources to responding to unanticipated congressional requests and performing target of opportunity work.

Unanticipated Congressional Requests

In order to respond to unanticipated congressional requests that fall outside of our issue area focus, we established a congressional response group. This group conducts reviews in areas and agencies where specific audit strategies were not planned. Our reviews of a Department of the Army request for proposals for a \$300 million automated information system and the information processing issues associated with the October 1987 stock market crash are two examples of requests led by this group. As evidenced by our work on the Army request for proposals, where we reported within 30 days of the request, this group enhances our timeliness and responsiveness and improves our accountability for unanticipated congressional requests. Further, the availability of this group offers assurance that our other operating groups can continue to concentrate on achieving their planned strategies with less interruption.

Target of Opportunity

Evaluating the Department of Justice agencies' acquisition, management, and use of information processing resources is our target of opportunity area. The Department of Justice is the primary agency governing law enforcement activities and comprises a number of bureaus, divisions, and agencies. For fiscal year 1988, the Department of Justice plans to spend over \$441 million for information processing equipment and services—about 10 percent of its total budget.

Because of the diversity of the Justice area and our limited resources, our objective is to provide the Congress with assessments of how well information technology is being used at selected Justice activities. Congressional interest is high in this area, particularly in the Federal Bureau of Investigation and the Immigration and Naturalization Service. Further, the passage of the Immigration Reform and Control Act has mandated additional GAO reviews on the way the Immigration and Naturalization Service will use information technology to satisfy this major legislation. We also intend to assess other planned high-cost information technology projects at the Drug Enforcement Agency and the Federal Bankruptcy Courts. We anticipate that our work in these areas will result in identifying significant cost savings through better identification of requirements and alternatives for acquiring information processing equipment and services.

Other Work Not Directly Related to Issue Area

We also intend to perform work to support Financial Integrity Act efforts and GAO's general management reviews. Within the information management and technology issue area, we have developed a three-fold strategy for our Financial Integrity Act work to ensure that effective internal controls are established and maintained across the government. First, we plan to continue to evaluate year-end Financial Integrity Act reports and assess agencies' progress in improving internal controls. Second, we are developing criteria to identify assignments in agencies having computer-related material weaknesses. These reviews would require technical expertise to (1) identify unreported weaknesses, (2) assess the effectiveness of corrective actions, and (3) evaluate the effectiveness of the agency's processes for accomplishing their Financial Integrity Act responsibilities. Finally, we plan to further integrate internal control work into our other assignments, in accordance with GAO Policy Bulletin No. 2.

We also intend to continue our commitment to GAO's general management reviews. Our recent central agency review uncovered information resources problems in the exercise of governmentwide responsibilities, development of policy, and management of programs. Our overall objective in this area is to determine how well an agency manages and uses its information resources. We will assess the agency's plans for developing systems to meet mission or administrative needs and its effectiveness in adhering to governmentwide policies and procedures on information resources. From our work, we can effectively support the overall management review objectives of the program divisions, as well as enhance our planned governmentwide and agency-specific work. Further, we will use our experience from future management reviews to identify cross-cutting issues and problems in information resources management.

Information Resources Management Experts Consulted

Name	Current Position
Mr. Charles Bingman	Adjunct Professor, George Washington University; National Academy of Public Administration member
Ms. Jane Bortnick	Assistant Chief, Science Research Service, Congressional Research Service
Mr. James Burrows	Director, Institute of Computer Science and Technology, National Bureau of Standards
Mr. David Cox	Associate Deputy Commissioner for Management, Veterans Administration; President's Council on Integrity and Efficiency member
Mr. Frank DeGeorge	Acting Inspector General, Department of Commerce
Mr. Robert Harris	Director, House Information Systems
Mr. Philip Kiviat	Vice President, Business Development, Sage Federal Systems, Inc.
Mr. Joseph Leo	Deputy Administrator for Management, Food and Nutrition Service, Department of Agriculture
Dr. Charles McClure	Professor, Syracuse University
Mr. Frank McDonough	Deputy Commissioner, Information Resources Management Service, General Services Administration
Dr. Harlin Mills	Director, Information Systems Institute, Inc.
Dr. James Painter	Chief Scientist, U.S. Marines
Mr. Reed Phillips	Acting Director for Management Information Systems, Department of Commerce
Mr. John P. Springett	Director, Information Resources Management Systems, Department of Defense
Mr. John Swearingen	Staff Director, Senate Rules Committee, Data Processing Managers Association head
Mr. Rick Weingarten	Program Manager, Communications and Technologies, Office of Technology Assessment

Fiscal Year 1989 Presidential Priority Systems Included in Information Management and Technology Issue Area Plan

General Services Administration's Federal Telecommunications System
2000

Defense Logistics Agency's Logistics Modernization Program

Internal Revenue Service's Tax System Redesign

Social Security Administration's Systems Modernization Plan

Federal Aviation Administration's National Airspace System's
Advanced Automation System

Department of Interior's Automated Land and Mineral Record System

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