
GAOAccounting and Information
Management Division

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Improving Federal Performance in the Information Age

Issue Area Plan: Fiscal Years 1996-98



Foreword

As the investigative arm of the Congress and the nation's auditor, the General Accounting Office promotes a more efficient and cost-effective government; exposes waste, fraud, abuse, and mismanagement in federal programs; helps the Congress target budget reductions; strengthens financial accountability and information management; and alerts the Congress to trends that may have significant fiscal or budgetary consequences. GAO develops strategic plans to ensure that its limited resources address issues of greatest importance.

This plan focuses on GAO's role in reforming the way federal agencies select, control, and evaluate their information technology (IT) initiatives so that they can better leverage the power of computers and communications networks to improve performance and cut costs. Despite spending over \$200 billion in this area during the last decade, agencies still have chronic difficulty in developing the software and acquiring the systems they need to administer programs effectively, eliminate costly and inefficient work processes, manage finances to ensure proper accountability, and enhance responsiveness to the public. The scope and consequences of this problem are enormous, since computer and communication technology now supports nearly every aspect of the federal government's over \$1.5 trillion in operations and spending--from national defense and air traffic control to revenue collection and benefit payments.

Our overall goal is to help maximize the public's return on federal information technology investments--in terms of dramatically reduced operational costs, improved quality, and better service delivery--while minimizing risks that can lead to costly system development failures. To achieve this goal, federal agencies must learn and adopt sound, modern information management practices. Building on our insights gained from years of reviewing federal systems, we have worked with leading private and public sector organizations to identify the management practices they perfected in successfully harnessing technology to meet their strategic goals. We have helped the Congress incorporate many of these proven practices into a comprehensive framework of federal management reform. This includes important revisions in 1995 to the Paperwork Reduction Act (PRA) and passage of the landmark Information Technology Management Reform Act (ITMRA) of 1996. Among other things, this legislation calls for close linkage between an agency's mission goals, business plans, and IT projects. Improved top management accountability is driven by the use of capital planning and investment processes for selecting IT projects and by rigorous measurement of the projects' performance outcomes.

Our focus now is to work with the Congress to see that these important reforms are implemented governmentwide. Agencies need to build the organizational structures, roles, skills, and discipline to (1) define critical information needs, (2) make informed, strategic decisions on technology investment, (3) recognize and manage the risks of system development efforts,

and (4) keep pace with evolving management practices and emerging technology issues. As indicated in table I, our four key lines of effort are to:

- help correct longstanding problems in costly, essential system modernization efforts that are in serious trouble and at high risk of failure;
- prevent problems in critical system development efforts before major cost, schedule, and performance problems occur;
- improve information management governmentwide by identifying root causes of chronic technology-related problems and promoting proven practices for overcoming them in order to maximize the benefits of technology and control development risks; and
- define key emerging technology issues and opportunities that the Congress and executive branch agencies need to address.

Our work will involve not only performing technical reviews of major system developments, but devising standard methodologies to assess them more efficiently. We will also concentrate on technology's role in redesigning outmoded and wasteful work processes. This broad-based approach will put us in a stronger position to help the Congress determine whether agencies are pursuing appropriate technology initiatives and keeping them on track.

Implementing effective practices for managing technology at the strategic and operational levels requires a considerable change in federal agencies' culture, which often relegates technology issues to the organization's middle ranks and does not create a foundation of methods, incentives, and skills for sound information management. Close, constructive oversight and budget control will continue to be essential to hold agencies accountable for improving their information management and achieving measurable results.

If you have any questions or comments, please contact me or any of our management team listed in table III.



Gene L. Dodaro
Assistant Comptroller General
Accounting and Information Management Division (AIMD)
(202) 512-2600 Internet: dodarog.aimd@gao.gov

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Table I: Key Issues

Issue	Significance
<p>High-Risk Systems</p> <p>How can problems be corrected in major system development efforts and modernization programs that are at serious risk of failure?</p>	<p>Federal agencies have chronic difficulties in developing information systems. Project delays drive up costs and erode projected benefits; poor analysis/design aggravates operational problems; and sometimes a cascade of development troubles leads to project termination. During fiscal year 1995, GAO, OMB, and the General Services Administration (GSA) determined that 11 federal agencies had projects or areas of IT management that were at high risk of failure. Given its limited resources, GAO is focusing heavily on four of these high-risk areas that are experiencing severe problems, involve complex technology, and/or are mission critical:</p> <ul style="list-style-type: none"> • The Federal Aviation Administration's (FAA) \$37-billion effort to overhaul Air Traffic Control (ATC) has experienced problems over the years due to changing requirements, lack of engineering discipline, unrealistic cost and schedule estimating, and poor contractor oversight. Parts of this large effort—which contains over 150 separate projects—were recently canceled, replaced, and/or restructured. • The Internal Revenue Service's (IRS) \$8-billion Tax Systems Modernization (TSM) systems development effort still lacks a comprehensive business strategy to cost-effectively reduce paper submissions. The requisite management, software development, and technical infrastructures needed for this large effort are not yet fully developed and put in place. • The Department of Defense's Corporate Information Management Initiative (CIM) was to have saved billions by streamlining operations and managing resources more effectively. But CIM has yielded few results. Meanwhile, Defense continues to invest over \$9 billion annually on its information technology infrastructure supporting non-mission functions without having an overall strategy, architecture, or performance measures to ensure effective and efficient outcomes while meeting the demands of the warfighter. • The National Weather Service's (NWS) over \$4.5-billion program to modernize its weather observing, information processing, and communications systems is now estimated to be 5 years behind schedule. This effort still lacks an architecture to guide the design, development, and evolution of the multiple systems that comprise the modernization, and it faces an assortment of system performance problems and software development risks.

Table I: Key Issues

Objectives	Focus of Work
<ul style="list-style-type: none">• Identify specific actions needed to correct longstanding problems in major high-risk modernization efforts to help significantly increase the probability of their success.• Develop a systematic approach and diagnostic techniques to identify and evaluate information technology initiatives that are at high risk of failure.	<ul style="list-style-type: none">• Review FAA's (1) architectural planning and enforcement, (2) software/system acquisition processes, and (3) investment management practices being used to field its modernized ATC system. Also, review selected high-risk systems under the modernization program.• Monitor IRS's efforts to overcome management and technical weaknesses that must be corrected if tax systems modernization is to succeed. Assess IRS's actions to reduce paper submissions, invest in and prioritize systems, improve software development capabilities, and manage TSM technically (i.e., systems architectures, testing, and integration).• Evaluate selected system modernization projects to assess their relationship to each of Defense's strategic information resources management (IRM) objectives, contributions toward improved operations, implementation of strategic management best practices, and adherence to sound system design and development practices. Determine the viability of each project's overall strategy and implementation capability, identifying approaches needed to improve the chances for success.• Review NWS's efforts to develop and field the Advanced Weather Interactive Processing System (AWIPS)—the final and most important piece of its modernization program. Also review NWS's effectiveness and efficiency in evolving and operating/maintaining already fielded modernized systems.

Table I: Key Issues

Issue	Significance
<p>Critical Development Efforts</p> <p>How can agencies prevent problems and facilitate the success of (1) new, high-potential information technology initiatives and (2) existing modernization efforts?</p>	<p>Our work over the last decade has demonstrated that many of the problems that result in wasteful system development failures often can be traced back to the inception of a project, when basic decisions are made on performance requirements, system design, contractor involvement, and project management. Some projects are poorly linked to mission objectives or major performance goals, and questions need to be raised about their worth before money is spent and the project gains a life of its own.</p> <p>Unresolved problems such as these are felt through the whole life cycle of a development effort, and become magnified and more difficult to correct as time goes on. Consequently, it is critical to identify, diagnose, and correct problems as early as possible in order to prevent them from causing runaway, high-risk projects. This is particularly important from the standpoint of controlling IT appropriations. Delaying decisive action to fix problems early invariably drives up project costs—often dramatically—as the project is restructured and patched up on the fly.</p>

Table I: Key Issues

Objectives	Focus of Work
<ul style="list-style-type: none">• Systematically identify new IT initiatives, understand the agencies' IT investment portfolio, and evaluate major projects against diagnostic criteria to determine whether they show indications of major, unaddressed risks that may lead to failure or unrealized potential.• Consistently identify and facilitate the success of the highest priority system improvement and development efforts across the government by diagnosing and correcting problems early in a project's life cycle. These new efforts—many driven by executive branch and congressional interest in streamlining government operations—encompass a wide variety of issues, such as electronic benefits transfer, computer matching, and environmental and trade databases.	<ul style="list-style-type: none">• Review IT portfolios at selected agencies to identify major new initiatives that show signs of poor risk management.• Evaluate the Health Care Financing Administration's (HCFA) \$150 million Medicare Transaction System (MTS) development effort. MTS, expected to process over 1 billion claims annually by the year 2000, is currently showing signs of unnecessary risk and schedule compression.• Review implementation of the Department of Agriculture's (USDA) program to modernize administrative processes and follow-up on USDA's Info Share program to assess the department's use of technology in streamlining its business processes.• Evaluate Veterans Benefits Administration's (VBA) data center consolidation and claims processing systems' modernization to verify expected savings and service improvements.• Evaluate the Department of Education's efforts to develop its new system for student loans and determine the extent to which an integrated approach is being taken to systems development.• Assess the architecture of the Department of the Treasury's electronic benefits transfer (EBT) system to determine the adequacy of its design and security controls.• Evaluate National Institutes of Health's (NIH) progress in correcting problems in managing its \$800 million total system contract and in meeting users' needs.

Table I: Key Issues

Issue	Significance
<p>Improving Information Management</p> <p>How can the federal government overcome the root causes of chronic information management problems and become consistently successful in developing the technology infrastructure needed to reduce costs and improve performance?</p>	<p>Pervasive, entrenched problems in agency information management and system development practices have led to the undoing of one information technology initiative after another. To break this cycle of failure, we have worked to identify and promote specific management practices that get at the root causes of these problems and provide agencies with the discipline, methodologies, and techniques to get repeatable successes in system development efforts.</p> <p>We found that leading private and public sector organizations have devised an integrated set of management practices for developing the information systems and technical infrastructure needed to meet their mission goals. These practices offer essential lessons on how federal agencies can diagnose and overcome the root causes of their chronic information management problems, maximize the benefits of technology, and control the risks of system development projects. We have been successful in working with the Congress to incorporate such practices into law and regulation. Our efforts are now focused on evaluating individual agencies' implementation of them. To this end, we have developed assessment methodologies and tools in several key areas and have adopted approaches and techniques from leading organizations:</p> <ul style="list-style-type: none"> • Strategic Information Management: Having identified and published best practices in this area, we developed a <i>Self-Assessment Toolkit</i> for diagnosing where improvements are needed in agencies and guidance on IT investment, IT performance measures, and CIO responsibilities. • Business Process Reengineering: Our <i>Reengineering Assessment Guide</i>, augmented by commercial modeling tools, helps auditors focus on key issues that agencies must address in analyzing and redesigning work processes to achieve dramatic performance improvements. • Information Systems: Our <i>System Assessment Framework</i> provides guidance on assessing the planning, development, and operation of individual systems to meet an agency's information needs. We also are developing guidance for reviewing internal controls in automated systems, and are adapting various software development and acquisition assessment guides, such as Software Engineering Institute's <i>Software Capability Evaluation</i> and Defense's <i>Program Managers' Guide to Software Acquisition Best Practices</i>.

Table I: Key Issues

Objectives	Focus of Work
<ul style="list-style-type: none"> • Work with the Congress to implement major information management reforms governmentwide as embodied in the Chief Financial Officer's (CFO) Act, the Paperwork Reduction Act, the Information Technology Management Reform Act, the Federal Acquisition Streamlining Act, and the revisions to OMB Circular A-130. • Help implement sustainable, repeatable management and operational practices in major federal agencies that will increase their ability to successfully select, develop, implement, and maintain the information system initiatives needed to reduce costs and improve performance. • Encourage agencies to control their information technology-related spending by carefully assessing the costs and benefits of their entire portfolio of projects and proposed projects. • Increase the overall return on investment for the federal government's annual \$26 billion in information technology spending by getting agencies to direct their technology efforts toward streamlining or reengineering outmoded work processes. • Help improve federal agencies' system development efforts by identifying leading public and private sector organizations' "best practices" relative to the implementation of evolutionary and incremental system development and deployment approaches. • Help increase the level of maturity of federal agencies' software development processes to improve their ability to produce high-quality software within estimated costs and schedules. 	<ul style="list-style-type: none"> • Prepare annual overview for Congress on the state of federal information management, indicating major problems and achievements. • Monitor agencies' appointments of Chief Information Officers (CIO) and determine whether they have appropriate authority and responsibilities. • Use IT Investment Guide to assess agencies' selection, control, and evaluation processes for managing IT investments. • Continue to refine assessment methodologies and promote agencies' use of best practices in strategic information management, IT investment, business process reengineering, systems development, and telecommunications management. • Evaluate efforts to implement improved strategic information management practices at Defense, NASA, and Customs. • Identify and evaluate opportunities to reduce costs and increase service to the public by reengineering outmoded business processes, consolidating systems and networks, sharing/consolidating data, and outsourcing. Review improvement efforts at the Food and Drug Administration, Veterans Affairs, SSA, Defense, HUD, USDA, and Energy. • Evaluate the extent to which HCFA is incorporating commercial off-the-shelf software to help detect fraud and abuse. • Evaluate software development capability at VA, Defense, and IRS; and software acquisition capability at FAA. • Evaluate implementation of the principles of IT performance measurement governmentwide.

Table I: Key Issues

Issue	Significance
<p data-bbox="115 478 630 512">Emerging Technology Issues</p> <p data-bbox="115 548 605 638">How can agencies identify and assess the relative importance of emerging issues in information technology?</p>	<p data-bbox="711 478 1451 1054">Our society is becoming more dependent on information systems as computer technology and its applications continue to evolve and grow rapidly. The performance-to-price ratio of computer hardware is constantly improving. The number of users on the Internet is burgeoning. New product cycles in the technology industry are becoming shorter and shorter. As a result, even before current issues can be resolved—such as replacing aging information systems—new issues emerge—such as electronic benefits transfer, electronic data interchange, data and network management, and the security of global networks. A particularly alarming example is the urgent need to modify existing information systems to accommodate calendar dates past the year 1999 (i.e., 01/01/00 and beyond). Unless this huge effort is accomplished successfully, the problem could lead to massive disruptions in agency operations and service to the public. It is imperative that the government stay abreast of the risks and opportunities that these types of emerging issues pose to its operations, the public at large, and the national interest.</p>

Table I: Key Issues

Objectives	Focus of Work
<ul style="list-style-type: none"> • Ensure that the Congress is kept informed of the most significant emerging issues in IT. • Develop a strategy for assessing data and network management issues. • Explore opportunities for improving agency operations through the use of electronic benefits transfer, electronic data interchange, and the Internet. 	<ul style="list-style-type: none"> • Perform an annual update for Congress to identify emerging governmentwide IT issues. • Survey experts and federal officials to gain an understanding of the information security issues facing our government and the nation, and what actions are underway to address these issues. • Assess issues and strategies for addressing the "Year 2000" date change, a massive problem that may cost the government tens of billions of dollars to resolve. • Assess the federal security-related policy-setting and oversight structure, as well as agency policies and practices in key areas, such as risk response, risk management, and security program management. • Use the results of computer-related control assessments done as part of CFO Act financial audits to assess how well federal agencies are ensuring the availability, integrity, and confidentiality of information resources critical to their operations. • Assess impact of the Internet on the vulnerability of Defense information systems. • Evaluate Defense's effort to implement electronic commerce and data interchange. • Evaluate federal agencies' use of modern software engineering practices, such as object-oriented design and development techniques, database normalization, and iterative design and development techniques. • Assess whether newer, more cost-effective technologies should be incorporated into NOAA's plans for its follow-on weather satellite systems.

Table II: Planned Major Work

Issue	Planned Major Job Starts
High-Risk Systems	<p data-bbox="448 468 509 493"><i>FAA:</i></p> <ul data-bbox="448 527 1468 646" style="list-style-type: none"><li data-bbox="448 527 1468 583">• Evaluate ATC Modernization Program's (1) software acquisition capability, (2) investment management practices, and (3) system architecture management.<li data-bbox="448 585 1094 611">• Evaluate Display Channel Complex Rehost Project.<li data-bbox="448 613 1390 646">• Analyze relative risks of ATC Modernization Program's portfolio of projects. <p data-bbox="448 680 581 705"><i>IRS/TSM:</i></p> <ul data-bbox="448 739 1468 951" style="list-style-type: none"><li data-bbox="448 739 1468 764">• Review IRS's management and technical capabilities for modernizing its systems.<li data-bbox="448 766 1377 823">• Review IRS's systems capabilities to support sound financial accounting of accounts receivables.<li data-bbox="448 825 964 850">• Review status of IRS's systems security.<li data-bbox="448 852 1468 909">• Review IRS's policies and procedures for protecting taxpayer data provided to the states.<li data-bbox="448 911 1357 951">• Evaluate the software acquisition maturity of the IRS/TSM organization. <p data-bbox="448 984 618 1010"><i>Defense/CIM:</i></p> <ul data-bbox="448 1043 1430 1136" style="list-style-type: none"><li data-bbox="448 1043 1430 1100">• Evaluate Defense's strategy and implementation of its Global Combat Support System and its Global Command and Control System.<li data-bbox="448 1102 1276 1136">• Continue to evaluate Defense's critical interim migration systems. <p data-bbox="448 1169 768 1194"><i>National Weather Service:</i></p> <ul data-bbox="448 1228 1094 1262" style="list-style-type: none"><li data-bbox="448 1228 1094 1262">• Review NWS's efforts to develop and field AWIPS.
Critical Development Efforts	<ul data-bbox="448 1465 1495 1772" style="list-style-type: none"><li data-bbox="448 1465 1341 1522">• Review USDA's implementation of its Modernization of Administrative Processes program and continue to evaluate its Info Share initiative.<li data-bbox="448 1524 1455 1581">• Evaluate VBA's claims processing reengineering and current automation efforts, including consolidation of data centers.<li data-bbox="448 1583 1365 1608">• Evaluate the current status of NIH's system design and implementation.<li data-bbox="448 1610 1360 1635">• Review HCFA's management of MTS's cost, schedule, and requirements.<li data-bbox="448 1638 1495 1694">• Review Education's current efforts in developing systems and determine the extent to which the department has an integrated approach.<li data-bbox="448 1696 1463 1772">• Assess the design of the Treasury's EBT system and the adequacy of its security controls.

Table II: Planned Major Work

Issue	Planned Major Job Starts
Improving Information Management	<p data-bbox="456 516 667 548"><i>Governmentwide</i></p> <ul data-bbox="456 579 1510 1003" style="list-style-type: none">• Work with the Congress to oversee the implementation of the revised Paperwork Reduction Act and the Information Technology Management Reform Act.• Assist the Congress in developing new or revised laws to improve federal strategic information management.• Identify best practices in the public and private sector for successful business process reengineering.• Identify opportunities for agencies to reduce costs and improve performance by reengineering business processes.• Develop and issue guidelines for measuring and improving the performance of IRM units.• Evaluate federal agencies' efforts to implement IT performance measures.• Identify unnecessary or inappropriate IT items in the executive branches' fiscal year 1997 and fiscal year 1998 IT budgets.• Evaluate opportunities to achieve governmentwide telecommunications savings. <p data-bbox="456 1066 667 1098"><i>Federal Agencies</i></p> <ul data-bbox="456 1129 1510 1864" style="list-style-type: none">• Review and improve the strategic information management practices at selected agencies.• Apply the IT Investment Guide at selected agencies, such as FAA, to assess and improve their decisionmaking and control process for technology investments.• Review HUD's efforts to strengthen its IRM program to support evolving information needs.• Review FDA's business process improvement plans and systems design/implementation efforts.• Review VA/DOD systems integration.• Review SSA's continuing reengineering of its disability claims process.• Evaluate the potential for HCFA to incorporate commercial off-the-shelf software in its program for detecting potential fraud and abuse.• Review Medicare systems to detect inpatient billing abuse.• Evaluate Energy's information system streamlining and downsizing initiatives.• Evaluate Defense's progress in implementing financial management reform.• Evaluate the software development maturity of the Defense Finance and Accounting Service (DFAS) and its interfacing Defense components.• Evaluate the software development maturity of various Defense logistics components and interfacing Defense organizations.• Assess and compare upgrade practices for weapons' embedded computer systems.• Identify opportunities to consolidate NASA, Defense, and NOAA systems.• Analyze the effectiveness of Defense's IT investment strategies.• Identify opportunities for Defense to outsource IT services.

Table II: Planned Major Work

Issue	Planned Major Job Starts
Emerging Technology Issues	<ul style="list-style-type: none">• Analyze results of computer security-related control assessments done as part of CFO Act financial audits.• Assess the federal security-related policy-setting and oversight structure.• Assess agencies' policies and practices in key areas of computer security.• Assess issues, problems, and strategies for addressing the "Year 2000" date change.• Identify and assess Defense's efforts to address information security issues.• Investigate selected incidents of attacks on Defense computer systems.• Evaluate Defense's efforts to implement electronic commerce (EC) and electronic data interchange (EDI).• Evaluate federal agencies' use of iterative design and development techniques to reduce program risks.• Assess NOAA's plans for its next generation weather satellite systems.

Table III: GAO Contacts

Director, IRM/Policies and Issues	Christopher Hoenig	(202) 512-6406 hoenigc.aimd@gao.gov
Director, IRM/Defense; General Government; Resources, Community, and Economic Development	Jack Brock	(202) 512-6240 brockj.aimd@gao.gov
Associate Director	Linda Koontz	(202) 512-6240 koontzl.aimd@gao.gov
Director, IRM/Health and Human Services	Patricia Taylor	(202) 512-6408 taylorp.aimd@gao.gov
Directors, IRM/Information Systems Methods and Support	Frank Reilly	(202) 512-4537 reillyf.aimd@gao.gov
	William S. Franklin	(202) 512-4537 franklinw.aimd@gao.gov
Chief Scientist, Computers and Telecommunications (IRS/TSM and FAA reviews)	Dr. Rona Stillman	(202) 512-6415 stillmanr.aimd@gao.gov


