

GAO

## Testimony

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# INFORMATION TECHNOLOGY

## Best Practices Can Improve Performance and Produce Results

Statement of Christopher Hoenig  
Director, Information Resources Management  
Policies and Issues  
Accounting and Information Management Division



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Mr. Chairman and Members of the Subcommittee:

It is a pleasure to be here this morning to discuss how best practices applied by leading organizations can be effectively used to improve the management of information technology (IT) in the federal government. A huge gap exists between public sector and private sector capabilities to use information technology to provide modern, efficient, and cost-effective services. Narrowing this gap is possible through improved legislation that requires agencies to adopt modern management practices and produce results. As you know, we have recommended IT management reforms for the last two years that are grounded in our past audit work and case study research conducted on leading public and private organizations.

Recently, we have helped to support significant revisions in laws and regulations, such as the Paperwork Reduction Act, OMB management circulars, and—just recently—the Information Technology Management Reform Act as amended to National Defense Authorization Act for Fiscal Year 1996. In some cases, these revisions represent the first significant changes made to IT-related legislation in over a decade. I might add, Mr. Chairman, that these accomplishments have only been possible with the interest, commitment for reform, and support from members of Congress who have pushed for greater accountability for public tax dollars.

In the near future as a result of these legislative changes and new direction from the Administration, agency leaders should begin making technology investment decisions based on careful analyses of relative costs, benefits, and risks. Consequently, Congress should be better informed of how technology expenditures are being used to address the pressing business problems of government agencies. More importantly, with an investment approach, IT projects should have a better chance of being initiated, continued, delayed, or cancelled on the basis of mission or operational performance improvements — the primary purpose of deploying information technology in the first place.

Much hard work lies ahead in implementing new management processes and making tough, informed decisions on how to best apply available IT to the government's pressing productivity, quality, and service delivery problems. Valuable lessons are plentiful about both successes and failures in the private and public sector that agencies can learn from.

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Today, I would like to focus my remarks on four key lessons gleaned from our ongoing research and our evaluations of strategic information management issues in federal agencies:

- First, better facts are needed about the government's IT investments. What is known is that federal IT-related obligations now total at least \$25 billion annually. What is not known is what the government is specifically getting in return for these expenditures. Investment streams of this magnitude must be made carefully and with a full understanding of what the anticipated and actualized mission benefits are.
- Second, IT is characterized by high risk and high return. Real opportunities do exist to use it in ways that can boost organizational performance. But, risks of failure are ever present and must be rigorously managed in order to ensure successful decisions and project completions.
- Third, repeatable success takes sound management processes that are applied with relentless discipline. Our research on those organizations that implement IT projects successfully found that with rapidly changing technological power and choices, sustainable and effective management practices are the key to achieving regular success.
- Fourth, the challenge is implementation. Leading organizations found that understanding these practices was only a small first step. For most, it took three to five years to fully institutionalize the practices into improved management processes. Similarly, in the federal government, a consensus has emerged among government decision-makers on what the problems are and what can be done to solve them. Now, agency leaders must effectively implement more effective IT management processes and reinforce accountability to produce tangible results with IT investments.

I would like to elaborate on each of these points and then make some summary remarks.

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## Better Information Needed About It Investments

In the current environment of making government work better and cost less, there are high expectations of information technology to change old, inefficient ways of running programs and delivering taxpayer services. Most federal agencies are largely dependent on information systems to deliver services, maintain operations, track outlays and costs, manage programs, and support program decisions. Technology offers government a means to revolutionize the way it interacts with citizens to streamline service, improve quality, and curtail unnecessary costs. Demonstrating these critical linkages to top government executives is paramount to

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achieving the necessary attention, understanding, and support necessary for long-term success.

Several facts are well known. The expectations for technology are set in a challenging federal environment. Increasingly, pressure is being brought to bear on shrinking the size of the federal deficit, not only by reducing spending but by getting better service for lower ongoing costs. IT-related obligations in the federal budget, exceeding \$25 billion annually, may be put under increasing scrutiny as part of overall discretionary spending.

Further, technology itself is evolving at a rapid pace. The industry reports on this issue are consistent. Every few years, the performance-to-price ratio of computer hardware doubles. New product cycles in the information technology industry now average months rather than years. This rapid evolution produces new challenges—such as the security of global networks—before current problems can be fully resolved—such as the replacement of aging, legacy systems that can no longer meet requirements.

In this environment of demanding requirements, close scrutiny, and rapid change, more attention needs to be focused on what is not known about the government's technology investments. First, the government really does not know exactly how much it is spending on IT. The \$25 billion figure represents specific IT obligations reported to OMB by federal agencies through a special budget exhibit.<sup>1</sup> This information is not comprehensive or collected on a governmentwide basis; therefore, the total amount of annual spending for IT is unknown.<sup>2</sup>

For example, agencies are not required to report IT obligations under \$50 million. The legislative and judicial branches of government are not required to report IT obligation data to OMB. Additionally, IT obligations embedded in weapon systems and federally funded research on computers are also not part of the reporting requirement. If included, these figures could significantly alter the size of the governmentwide IT investment portfolio. The Department of Defense, for example, has estimated it spends \$24 billion to \$32 billion annually for software embedded in weapon systems.

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<sup>1</sup>OMB Circular A-11, Section 43.

<sup>2</sup>Information Technology Investment: A Governmentwide Overview (GAO/AIMD-95-208, July 1995). For the most part, agencies do not break out IT obligations as separate line items in their budget documents, but rather include this information within program or administrative costs. The exception may be in the case of major modernization efforts that rely heavily on information systems, but this too can vary from one agency to the next.

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Second, most agencies do not capture or maintain reliable information on projected versus actual costs and benefits of IT investments. Without this type of information, it is virtually impossible to construct a return on investment calculation as a way of demonstrating positive net gains in cost reductions, improvements in quality, and reduced cycle time for service delivery.

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### Technology Projects Offer Potential for High Returns, but Include Significant Risks and Uncertainties

The promise of new information technologies is compelling in the federal environment where aging systems prevail that are often ill-designed for changing business or mission requirements. There are inherent risks associated with not acting to address these technology deficiencies, including potential operational disruptions to vital government services such as air traffic control, income tax collection, and benefit payments to recipients of health care or social security.

The opportunities for using technology to improve cost effectiveness and service delivery in government are immense. While the return of these investments are not yet proven, examples of how technology can be a powerful tool include:

- reducing public burden, such as IRS' Telefile project that allows taxpayers to file 1040EZ tax returns via touch-tone phones;
- reducing operating costs, such as data center and telecommunications consolidation projects being conducted by the Department of Defense and now OMB on a governmentwide basis, as well as post-FTS 2000 implementation, and governmentwide E-mail;
- creating choices and alternatives for the delivery of government services, such as electronic benefit transfer payments, information Kiosks, agency home pages on the Internet, and electronic data interchange between government vendors and agencies;
- increasing the responsiveness and timeliness of services, such as the Social Security's highly rated telephone customer service program.
- improving the value and impact of government information, such as the international trade and environmental data index projects being conducted under the auspices of the National Performance Review; and
- increasing the integrity and reliability of government information systems, such as reducing health care fraud through better software detection methods and enhancing the security of federal data through implementation of better internal controls.

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But there are also risks associated with taking action to implement new information systems. Our reviews of major modernization efforts have shown that the introduction of newer, faster, cheaper technology is not a panacea for flawed management practices or poorly designed business processes. Business needs must dictate the requirements and justification for the type of technology to be used.

To ensure this occurs, program units in agencies must carefully analyze the processes or procedures that are being modernized. When processes are reengineered in concert with the power of information technology, significant results can be achieved. Let me illustrate with a few select examples from both the public and private sector.

- Liberty Mutual reports that cycle time for the issuance of insurance policies averaged 62 days, even though the actual determination time took less than 3 days. Upon close inspection, management discovered inherent process and support inefficiencies, such as up to 24 different handoffs of the policy paperwork, separate appeals processes for both sales and underwriting, and separate computer systems for each department. By combining process redesign with a more powerful, integrated information system, Liberty was able to reduce cycle times by one-half, eliminated virtually all policy handoffs, and was able to significantly reduce appeals to policy denials.
- IBM Credit Corporation reports that the process to approve credit for IBM customers of computers, software, and services was redesigned from five steps and an average cycle time of seven days to a one-person, four hour process — a 90 percent improvement in cycle time and hundredfold improvement in productivity. Again, better designed and integrated information systems were part of the total solution.
- Eastman Chemical found that maintenance staff were spending as much as 50 percent of their time finding and ordering equipment parts. By combining process redesign with a computerized maintenance information system, Eastman Chemical reports it was able to cut by 80 percent the time needed to find and order materials. As a result, maintenance productivity has risen sharply and the company is saving more than \$1 million every year in duplicate inventory costs.
- The Department of Interior's Bureau of Reclamation has concluded that mission rescoping has resulted in a focus on water resources management rather than building large public works projects. The Bureau reports that reengineering and better use of technology has resulted in a grants approval process being reduced from 15 steps over 6 months to 5 steps

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and one week. Similarly, fish ladder design and funding approval processes have been streamlined from 21 steps taking over 3 years to eight steps taking just 6 months.

Nonetheless, just as technology can help produce impressive success stories, it can also become the focus of costly business failures. Dramatic, captured results can be few and far between. A recent research study conducted by The Standish Group on private and public sector organizations in the United States confirms this troubling trend.<sup>3</sup> According to the research, IT executives report that one-third of all systems development projects are cancelled before they are ever completed. This statistic highlights the reality of the complexity in planning, designing, and managing successful IT projects.

IT executives participating in the Standish Group research also reported that only 16 percent of all IT projects were considered successful—that is, judged to have accomplished what was expected within the budget anticipated at the outset. In addition, of those IT projects that are completed, only about 42 percent of the largest companies are successful in meeting their initial objectives. In addition, the study's participants reported that over 50 percent of IT projects exceed their original cost estimates by almost 200 percent. These statistics serve as a stark reminder that information systems projects carry high risks of failure if not carefully managed and controlled.

Although no comparable data is available that focuses exclusively on the federal government, our work on specific systems projects has found a cascade of problems—ranging from poorly defined requirements, poor contractor oversight, and inadequate system design to managerial and technical skill deficiencies—have led to project terminations, delays, or suspensions of procurement authority.<sup>4</sup>

In addition, three agencies with oversight responsibility—GAO, OMB, and GSA—have identified problems that selected systems development efforts or IT operations are having. Each agency has constructed a corresponding “high-risk” list to help focus top management attention on the problems and implement effective remedial actions. Of the 18 agencies and

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<sup>3</sup>Charting the Seas of Information Technology Chaos, The Standish Group International, 1994.

<sup>4</sup>Government Reform: Using Reengineering and Technology to Improve Government Performance (GAO/T-OCG-95-2, Feb. 2, 1995); Improving Government: Actions Needed to Sustain and Enhance Management Reforms (GAO/T-OCG-94-1, Jan. 27, 1994); Information Resources: Summary of Federal Agencies' Information Resources Management Problems (GAO/IMTEC-92-13FS, Feb. 13, 1992).



departments representing over 90 percent of total federal spending on information management and technology, nine have IT projects or areas of IT management on one or more of these high risk lists. Table 1 lists the eleven agencies and projects that are currently on high risk lists.

**Table 1: It Areas and Systems at Risk**

<b>Agency/IT Project</b>	<b>GAO High Risk Series</b>	<b>OMB High Risk List</b>	<b>GSA Time Out Program<sup>a</sup></b>
Federal Aviation Administration: Air Traffic Control Modernization/Advanced Automation System	√	√	√
Internal Revenue Service: Tax systems Modernization	√		
Department of Defense: Corporate Information System	√		
National Weather Service Modernization	√	√	√
Department of Agriculture: Info Share Project	*	√	√
Department of Justice: Information Systems Security	*	√	
Department of State: IT Operations and Security	*	√	
GSA: Oversight of Major Systems Development Efforts Within GSA	*	√	
Securities and Exchange Commission: Management of Systems Development Projects	*	√	
Veterans Benefits Administration: Claims Modernization	*		√
Patent and Trademark Office Modernization	*		√

<sup>a</sup>GSA has also conducted information resource management reviews that have touched on several of these agencies and programs.

\*Note: Though not designated as high risk, GAO has issued reports related to these efforts.

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GAO has testified regularly on the urgent need for basic management reforms in the federal government.<sup>5</sup> Systems development efforts often fail due to inadequate management attention and controls. Despite the visibility and oversight focus on many large systems development efforts, agency management has often been ineffective in reducing the risks associated with large, multi-year projects. For example, in our July 1995 review of IRS' Tax System Modernization, we found an absence of effective information management practices—such as IT investment selection, control, and evaluation processes—which were placing selected modernization projects at risk of failing to meet critical business needs.<sup>6</sup> The absence of these practices places executive level understanding and support of the technology project in jeopardy and reduces accountability for project success.

Inadequate project management, poor contractor oversight, and a shortage of staff with appropriate technical skills have also contributed greatly to systems development problems. After investing over 12 years and more than \$2.5 billion, the Federal Aviation Administration (FAA) chose to cut its losses in its problem-plagued \$6-billion Advanced Automation System (AAS) by either cancelling or extensively restructuring elements of this effort to modernize our nation's air traffic control system. Our work showed that AAS' problems were attributable to FAA's failure to (1) accurately estimate the technical complexity and resource requirements for the effort, (2) stabilize system requirements, and (3) adequately oversee contractor activities.<sup>7</sup>

We are also finding that agencies have not instituted a well-defined investment control process to manage the quality of systems development efforts and monitor progress and problems at an executive level. Our recent analysis of the potential risks associated with the Health Care Financing Administration's (HCFA) Medicare Transaction System (MTS) illustrates this problem. MTS, though small in comparison to larger

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<sup>5</sup>Improving Government: Actions Needed to Sustain and Enhance Management Reforms (GAO/T-OCG-94-1, Jan. 27, 1994), Government Reform: Using Reengineering and Technology to Improve Government Performance (GAO/T-OCG-95-2, Feb. 2, 1995), Government Reform: Goal-Setting and Performance (GAO/AIMD/GGD-95-13OR, Mar. 27, 1995), Managing For Results: Steps For Strengthening Federal Management (GAO/T-GGD/AIMD-95-158, May 9, 1995), Managing For Results: Critical Actions for Measuring Performance (GAO/T-GGD/AIMD-95-187, June 20, 1995), Government Reform: Legislation Would Strengthen Federal Management of Information and Technology (GAO/T-AIMD-95-205, July 25, 1995).

<sup>6</sup>Tax Systems Modernization: Management and Technical Weaknesses Must Be Corrected If Modernization is To Succeed (GAO/AIMD-95-156, July 26, 1995).

<sup>7</sup>Advanced Automation System: Implications of Problems and Recent Changes (GAO/T-RCED-94-188, Apr. 13, 1994).

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modernization efforts in other agencies, is one of the most critical new claims-processing systems being put into government today. When the system becomes operational in 1999, HCFA expects it to process over 1 billion claims annually and be responsible for paying \$288 billion in benefits per year. Although MTS is in its early development stages, our work last November found that HCFA is experiencing a series of problems related to requirements definition, project schedule, and project cost. Some of these are classic symptoms associated with the fate of other large, complex systems projects—extensive delays and schedule compression early in the project along with ill-defined systems requirements and objectives.

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## Consistently Applying Management Practices Is Important to Success

It is important that federal executives learn from leading organizations that have been successful in applying and managing technology to thorny business problems as well as opportunities for change. To help federal agencies improve their chances of success, we completed a study of how successful private and public organizations designed and implemented information systems that significantly improved their ability to carry out their missions. Our report describes an integrated set of fundamental management practices that are instrumental in producing success.<sup>8</sup> The active involvement of senior managers, focusing on minimizing project risks and maximizing return on investment, are essential. To accomplish these objectives, senior managers in successful organizations consistently follow these practices to ensure that they receive information needed to make timely and appropriate decisions.

Executives in leading organizations manage through three fundamental areas of practices. First, they decide to work differently by quantitatively assessing performance against leading organizations and recognizing that program managers and stakeholders need to be held accountable for using information technology well. Second, they direct their scarce resources toward high-value uses by reengineering critical functions and carefully controlling and evaluating IT spending through specific performance and cost measures. Third, they support major cost reduction and service improvement efforts with the up-to-date professional skills and organizational roles and responsibilities required to do the job. Table 2 illustrates the set of management practices we found in the leading organizations we studied.

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<sup>8</sup>Executive Guide: Improving Mission Performance Through Strategic Information Management and Technology—Learning From Leading Organizations (GAO/AIMD-94-115, May 1994).

**Table 2: Strategic Information Management Best Practices**

DECIDE TO CHANGE		DIRECT CHANGE	SUPPORT CHANGE
1	Recognize and communicate the urgency to change IT practices	4 Anchor strategic planning in customers needs and mission goals	9 Establish customer/supplier relationships between line and information management professionals
2	Get line management involved and create ownership	5 Measure the performance of key mission delivery processes	10 Position a Chief Information Officer as a senior management partner
3	Take action and maintain momentum	6 Focus on process improvement in the context of an architecture	11 Upgrade skills and knowledge of line and information management professionals
		7 Manage IT projects as investments	
		8 Integrate the planning, budgeting, and evaluation processes	

The power and the attraction of these practices is that they are intuitive and straightforward. And when used, they can help produce repeatable success. Some of our case study organizations experienced dramatic improvements, such as

- the proportion of IT projects completed on-time, within budget, and according to specified requirements going from 50 percent to 85 percent in two years,
- a 158 percent increase in workload being handled with the same level of staffing because of redesigned processes and modern, integrated information systems, and
- a 14-fold increase in benefits returned from information systems projects—from 9 percent of that projected to 133 percent of that projected.

But, as experience shows us, the challenge lies in the discipline and rigor with which they are consistently applied by organizations.

Rather than discuss each practice individually, let me focus on a few key ones and highlight their importance in the context of an overall strategic management framework.

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## Involvement and Commitment From Top Leadership

In the information age, top executives have the responsibility not only to define business goals, but also to initiate, mandate, and facilitate major changes in information management to support the achievement of these goals. Top executives must get personally involved in understanding the relative costs, benefits, risks, and returns associated with information technology investments they are making decisions about and allocating resources to. Unless top executives make these linkages, meaningful change can be slow and sometimes impossible.

Driven by budget constraints, one chief executive in our case study sample benchmarked existing systems development capabilities against industry standards. The CEO discovered that the company was getting only a small fraction of expected benefits from systems investments, while taking twice as long and spending four times the resources compared to an industry standard. To correct this, the CEO fostered partnerships between business unit managers and IT professionals that focused on building information systems with measurable benefits. Within 3 years, some tangible payoffs from this approach were occurring. Returns on IT investments rose from \$2 million to \$20 million per year, applications development and productivity improvements increased steadily, and staff resources were moved from maintaining existing computer applications to more strategic reengineering development and support.

## Focusing on Improving Business Processes

New technology alone will not improve performance or solve operational problems. It is merely a tool—albeit a powerful one—that supports work processes and the decisions surrounding those processes. If the work processes are inherently inefficient, then technology will not have substantive impact. Accomplishing dramatic improvements in performance usually requires streamlining or fundamentally redesigning existing work processes. Information technology projects must then become focused on improving the way work is done rather than simply automating existing, outmoded processes. As we have seen in the federal government, initiating information systems development projects to replace old technology or automate processes in and of itself is often a poor project justification.<sup>9</sup>

In one company we examined, long customer waits and unacceptable error and rework rates were threatening successful business growth. Business unit executives and information technology professionals worked together to redesign existing work processes and systems. As a result, a customer process that used to involve 55 people, 55 procedural

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<sup>9</sup>USDA Restructuring: Refocus Info Share Program on Business Processes Rather Than Technology (GAO/AIMD-94-156, Aug. 5, 1994), Social Security Administration: Major Changes in SSA's Business Processes Are Imperative (GAO/T-AIMD-94-106, Apr. 14, 1994), Veterans Benefits Administration: Further Service Improvement Depends on Coordinated Approach (GAO/T-AIMD/HEHS-95-184, June 22, 1995), Business Process Reengineering: DOD Has A Significant Opportunity to Reduce Travel Costs By Using Industry Practices (GAO/T-AIMD-95-101, Mar. 28, 1995).

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steps, and a 14-day service delivery was reduced to one person, one phone call, and one step with a 3-day service delivery.

Applying technology to new business processes cannot be done in an organizational vacuum. It requires careful consideration of the technical platform, or architecture, of the information systems. If several process improvement efforts are pursued in an unintegrated fashion, they may result in the creation of many new information systems that are isolated from each other. Such fragmentation can seriously inhibit the organization's ability to share information assets or leverage the benefits of new technology across the organization. The importance of developing and managing an integrated information architecture is one reason why sound strategic information planning is so critical.

#### Establishing a Strategic Information Management Process

Strategic planning often is depicted as "visionary" thinking or "where we want to go, whether we can get there or not." In the federal government, strategic management at the enterprise level is often a well-orchestrated paper chase responding to bureaucratic requirements and short-term crises, rather than an integrated, institutionalized process that focuses on producing results for the public. Conversely, in the leading organizations we visited, strategic business and information systems plans were always grounded in explicit, high-priority customer needs. Planning, budgeting, program execution, and evaluation are conducted in a seamless fashion, with the outputs of one process a direct input into the other. Most importantly, strategic goals, objectives, and direction are used to actually manage and evaluate the performance of the organization.

In one state revenue collection agency we examined, they decided to use the external customer—the taxpayer—as the focus for rethinking and redesigning its services. Using customer focus groups, comprised of individual taxpayers, small businesses, and large corporations, they redesigned the revenue collection process. Information systems and technology were used to maintain customer profiles to assist the agency in responding to questions, problems, and special situations for each taxpayer.

#### Linking Technology Investment to Performance Measurement

Getting the most out of scarce resources available to spend on IT is another key to success. Executives expect meaningful bottom-line improvements in the outcomes of key business process changes and applications of information systems and related technologies. For this reason, leading organizations carefully measure the performance of their processes, including the contribution that technology makes to their improvement. Senior management is personally involved in project

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selection, control, and evaluation and uses explicit decision criteria for assessing the mission benefits, risks, and costs of each project.

One leading organization we studied uses a “portfolio” investment process—based on decision criteria for assessing costs, benefits, and risks—to select, control, and evaluate information systems projects. As a consequence of more carefully scrutinizing proposed benefits and measuring actual performance results, the company realized a 14-fold increase in the return on investment from IT projects within 3 years.

The key to this investment approach is the ability to identify early—and avoid—investments in projects with low potential to provide improvements in program outcomes. Without this focus, organizations can easily become entangled in a web of difficult problems, such as unmanaged development risks, low-value or redundant IT projects, and an overemphasis on maintaining old systems at the expense of using technology to redesign outmoded work processes.

#### Establishing an Executive Level Focus for Information Management

Leading organizations have found that one important means for establishing a clear organizational focus for information management is to position a Chief Information Officer (CIO) as a senior partner with the organization’s top executives. The position itself is not the solution. What matters is the influence that the right person can bring to bear on strategic management issues and IT’s role in both helping resolve existing performance problems and capturing potential from new opportunities. An effective CIO should:

- serve as a bridge between top executives, line management, support staff, and IT professionals,
- advise top executives and senior managers on the worthiness of major technology decisions and investments,
- work with managers to understand and define the role of IT in helping achieve expected business or program outcomes, creating a joint partnership with line management to achieve successful project outcomes,
- design and manage the system architecture supporting the business needs and decision-making processes of the organization, and
- set and enforce appropriate technical standards to facilitate the effective use of information resources throughout the entire organization.

In one of our case study organizations, prior to establishing a CIO, the cost of maintaining and enhancing existing systems consumed nearly all the organization’s IT budget. There was no one to focus senior management attention on critical information management and technology decisions. Once an experienced CIO was put in place, technology investment

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decisions became highly visible and line executives were held accountable for the business case underlying these decisions. The CIO focused on improving the speed, productivity, and quality of IT products and services.

A key CIO responsibility is to promote a productive relationship between the users of technology and the information management and systems staff who support them. Managers in leading organizations recognize that they are customers of IT products and services. They assert control over the funding of IT projects and take responsibility for understanding and helping to define the technology needed to support their work. The IT professionals then act as suppliers, working to support efforts to meet clearly defined management objectives, make critical decisions, and solve business problems. This requires facilitation, mediation, balance, and consensus—particularly when weighing the needs of individual business units with the corporate needs of the organization. The CIO can help make this process work smoothly.

If the management focus of leading organizations who are successful at applying technology to business needs and problems are compared with typical management practices found in federal departments and agencies, major differences appear. Table 3 summarizes some of the primary discrepancies.



**Table 3: Management Approaches in Leading Organizations Versus Typical Federal Agencies**

Best Practice Management Area	What a Leading Organization Does	What a Typical Federal Agency Does
<b>Decide to change</b>  Initiate, mandate and facilitate major changes in information management to improve organizational performance	√ Quantitatively benchmarks against standards and industry leaders √ Evaluates current performance and opportunities for improvement √ Holds program managers and stakeholders accountable for IT decisions	<ul style="list-style-type: none"> <li>• Fails to benchmark performance</li> <li>• Delegates IT issues to technical units and staff</li> <li>• Sustains management rates of turnover that hinder true ownership and accountability</li> </ul>
<b>Direct change</b>  Establish an outcome-oriented, integrated strategic information management process	√ Evaluates existing mission critical processes before applying IT √ Directs scarce IT resources towards high-value, high priority uses √ Carefully controls and evaluates IT spending through specific cost and performance measures	<ul style="list-style-type: none"> <li>• Often justifies or purchases IT products and services before evaluating existing business processes</li> <li>• Lacks accountability and disciplined decision-making for IT investments</li> <li>• Fails to rigorously monitor the results produced by systems investments</li> </ul>
<b>Support change</b>  Build organizationwide information management capabilities to address mission needs	√ Maintains up-to-date professional skills in technology management √ Establishes clearly defined line and IT management roles and responsibilities	<ul style="list-style-type: none"> <li>• Perpetuates outmoded skill base with inadequate training and hiring of new expertise</li> <li>• Fails to delineate line management and IT professional roles and responsibilities in major system development and modernization efforts</li> </ul>

## Implementation of Governmentwide It Reforms

Congress has provided clear direction to move the debate from **whether** to change information management practices in the government to **what** exactly to change and **how** to do it. Significant changes in law have already occurred that represent major, positive steps forward in pushing for greater top management responsibility and accountability for successful IT outcomes and provide the impetus for improvements in agency management approaches.

Last year, the Paperwork Reduction Act was revised to include many of the fundamental management practices endorsed by our research. For example, strategic IT planning provisions explicitly call for linkages between agency business plans and IT projects. This strategic planning is to be anchored in customer needs and mission goals. Moreover, the

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agency head is now directly responsible for ensuring that IT-related activities directly support the mission of the agency. Additionally, IT projects are to be managed as investments, with a process put in place to maximize the value and assess and manage the risks of major IT initiatives.

In addition, OMB has revised its Circular A-130—the primary governmentwide policy guidance for strategic information management planning—to require agencies to (1) improve the effectiveness and efficiency of government programs through work process redesign and appropriate application of information technology, (2) conduct benefit-cost analyses to support ongoing management oversight processes that maximize return on investment, and (3) conduct post-implementation systems reviews to validate estimated benefits and costs.

Most notable is the Information Technology Management Reform Act of 1996 that has been passed as an amendment to the Fiscal Year 1996 DOD Authorization Act.<sup>10</sup> Not only does this legislation effectively build upon management and strategic planning themes in the Government Performance and Results Act and the Paperwork Reduction Act, it also contains some of the most significant changes made to IT planning, management, and procurement in decades. Agencies are required to use capital planning and investment processes for reaching decisions about IT spending, rigorously measure performance outcomes of IT projects, and appoint Chief Information Officers to ensure better accountability for technology investments. In addition, the procurement process has been streamlined to allow agencies more flexibility in buying commercially available products and awarding contracts. Collectively, these changes in law and regulation should make it clear to agency leaders what the Congress and the Administration intend to be done differently in investing and managing information and technology.

Just as important as the “what to do” is the “how to make it happen.” Agency managers need new methods and tools that will help facilitate fact-based discussions and analyses of proposed IT investments. Toward this end, we have developed a strategic information management assessment guide used in five agencies and departments to date—Housing and Urban Development, Coast Guard, IRS, Pension Benefit Guaranty Corporation, and the Bureau of Economic Analysis.<sup>11</sup> This analysis has

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<sup>10</sup>National Defense Authorization Act for Fiscal Year 1996, Public Law 104-106, Division E.

<sup>11</sup>Strategic Information Management (SIM) Self-Assessment Toolkit, Exposure Draft, Version 1.0, U.S. General Accounting Office, Accounting and Information Management Division, October 28, 1994.

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been used to identify management strengths and weaknesses and to construct corrective action plans. Several of these agencies have reported that the implementation of new management processes in concert with our best practices framework has helped save several millions of dollars by consolidating systems with business function redundancies, and cancelling questionable low-value IT investments. Other agencies have conducted self-assessments on their own, and we are in the process of obtaining feedback on their results.

OMB has also published an IT investment analysis guide<sup>12</sup>, which provides agencies with a structured management process for reaching decisions about selecting, controlling, and evaluating IT investment projects. Finally, we are developing more detailed management assessment guides for business process reengineering and IT performance measurement which we expect to distribute in the near future.

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## Concluding Remarks

Mr. Chairman, two key factors will inevitably affect changes to the government's approach to information technology management. First, government leaders must facilitate success. Never before has there been such a sense of urgency to improve how the government is managing and acquiring its information and technology assets. Where possible, success stories both inside and outside of the federal government must be shared and senior agency managers must learn from them.

The second key factor affecting long-term improvement to IT management in government is reinforcing accountability for results. In this regard, focused and consistent direction, advice, and oversight is needed from the Congress, the Executive Branch, and central oversight agencies. It is essential that the federal government's IT portfolio be visibly monitored in the oversight process. Agencies should be required to produce performance baselines, report on all IT obligations and expenses, show projected versus actual project results, and establish a proven track record in managing and acquiring systems technologies. Oversight flexibility should be increasingly earned as demonstrated capability to deliver increases.

With proper incentives and encouragement, agency managers can be expected to surface problems early and move towards management resolution before huge sums of money are expended. Budget and

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<sup>12</sup>Evaluating Information Technology Investments: A Practical Guide, Office of Management and Budget, Executive Office of the President (OMB Publication 041—001-00460-2, November 1995).

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appropriations decisions as well as oversight hearings can focus on anticipated risks and returns of IT projects, interim performance results, and final evaluations of long-term improvements to program outcomes, service delivery, and cost effectiveness.

This Subcommittee can play an important role in promoting new, effective management practices throughout the government by:

- providing oversight and guidance to federal agencies in implementing the IT-management related provisions of the Paperwork Reduction Act and the Information Technology Management Reform Act—similar to the very effective role you have played in overseeing the implementation of the Chief Financial Officers Act;
- focusing oversight attention on high risk IT projects and initiatives, such as your upcoming hearing planned on IRS's financial management reforms and Tax System Modernization project;
- identifying and focusing agency attention on new systems development efforts that are demonstrating signs of managerial or technical problems early in their life cycle before huge sums of money have been spent, such as your recent hearing on HCFA's Medicare Transaction System; and
- highlighting the importance of emerging information technologies and management techniques that can be effectively applied to the federal government.

Mr. Chairman, this concludes my prepared testimony. We look forward to working with you and the Subcommittee in your efforts to improve the public's return on investment in information technology. I would be glad to answer any questions you or other members of the Subcommittee may have at this time.

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