Order Code RL30661

CRS Report for Congress
Received through the CRS Web

Government Information Technology Management: Past and Future Issues (The Clinger-Cohen Act)

Updated January 15, 2002

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Summary

Government reform and improved management of public resources have been a common theme in congressional policymaking over the past decade. This report provides an overview of the Information Technology Management Reform Act (ITMRA) of 1996, or as it is better known, the Clinger-Cohen Act. Although the Clinger Cohen Act is a combination of the Federal Acquisition Reform Act (FARA) and the ITMRA, this report focuses on the information technology procurement and management reforms only.

At the time of its passage, ITMRA reflected a growing concern that the federal government was not prepared to successfully make the necessary information technology investments to streamline agencies and improve mission performance. The ITMRA repealed the Automatic Data Processing Act of 1965, or as it is better known, the Brooks Act. The goal of the Brooks Act was to reform federal information technology procurement by concentrating purchasing authority within the General Services Administration (GSA). However, prolonged acquisition cycles and rapid changes in technology eventually diminished the effectiveness of the "one-size-fits-all" approach of the Brooks Act.

The major provisions of ITMRA include: eliminating GSA's role as the *primary* agency for setting policy and regulations for federal information technology procurement, mandating the creation of a chief information officer (CIO) in all of the major federal agencies, establishing goals and reporting requirements for the reduction of costs and increase in efficiency through improved information management, and creating two pilot programs ("Share-In-Savings" and "Solutions-Based Contracting") to test alternative acquisition approaches.

Several years later some of these issues still have not been completely resolved. Agency efforts to follow through on the CIO provisions have been mixed. Non-competitive salaries, high turnover, organizational inertia, and budgetary control issues have been obstacles to implementation. The development of annual performance plans to evaluate the value of information management have been delayed due to measurement problems . In addition, little progress has been made to utilize the "Share-In-Savings" pilot program for information technology procurement. Some observers believe this is the result of an inability to measure baseline costs, poor project selection, and lack of agency incentives.

Looking ahead, as Congress has become increasingly interested in the Internet and information technology issues, it is possible that some provisions of the Clinger-Cohen Act and closely-related new concerns may receive attention in the 107th Congress. Some of these issues include the use of reverse auctions to lower procurement costs, the possibility of creating a position for a federal CIO, and the potential need for chief technology officers (CTO) as interest in electronic government and the delivery of services to citizens via the Internet grows.

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Background/Legislative History

Government reform and improved management of public resources have been a common theme in congressional policymaking over the past decade. Some examples include the Chief Financial Officers (CFO) Act of 1990, the Government Performance and Results Act (GPRA) of 1993,[1] the Federal Acquisition Streamlining Act (FASA) of 1994, the Federal Acquisition Reform Act (FARA) of 1996, and the Information Technology Management Reform Act (ITMRA) of 1996.[2]

A year after passage, FARA and ITMRA were renamed the Clinger-Cohen Act of 1996 in the fiscal year 1997 Omnibus Consolidated Appropriations Act, P.L. 104-208.[3] This report addresses various federal government information technology issues related to the Clinger-Cohen Act. Some of these issues include the recruitment and retention of federal information resource management (IRM) expertise and leadership, promoting the use of the "share-in-savings" pilot program, and ongoing efforts to make government more efficient in using information technology solutions.

It is possible that some provisions of the Clinger-Cohen Act and closely-related new concerns may receive renewed attention in the 107th Congress. Some of these issues include the use of reverse auctions to lower procurement costs, the possibility of creating a position for a national Chief Information Officer (CIO), and the potential need for chief technology officers (CTO) as interest in electronic government (e-government)[4] and the delivery of services to citizens via the Internet grows.

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[1]See CRS Report RS20257, *Government Performance and Results Act: Brief History and Implementation Activities During the 106th Congress,* by (name redacted).

[2]FARA and ITMRA were passed as Sections D and E respectively of the National Defense Authorization Act for Fiscal Year 1996, P.L. 104-106.

[3]General Accounting Office, *Chief Information Officers: Implementing Effective CIO Organizations,* GAO/T-AIMD-00-128, 24 March 2000.

[4]For related information, see CRS Report RL30745, *Electronic Government: A Conceptual Overview*, by (name redacted); CRS Report RL31088, *Electronic Government: Major Proposals and Initiatives*, by (name redacted); and CRS Report RL31057, *A Primer on E-Government: Sectors, Stages, Opportunities, and Challenges of Online Governance*, (name redacted).

The Brooks Act of 1965

At the time of its passage, ITMRA reflected a growing concern that the federal government was not prepared to successfully make the necessary information technology investments to streamline agencies and improve mission performance. The ITMRA repealed the Automatic Data Processing Act of 1965 (P.L. 89-306), or as it is better known, the Brooks Act. Although based on very different assumptions than those that precipitated ITMRA, the Brooks Act was also meant to reform federal information technology procurement practices. Specifically, the Brooks Act was designed to address three problems. The first problem was the concern that federal government computer purchasing was contributing to a hardware monopoly by a single manufacturer. At that time, the federal government was one of the largest purchasers of computer hardware, giving it significant market influence. Moreover, since it was common practice for an agency to buy replacement or additional equipment from the same vendor in order to reduce compatibility problems and upgrade costs, there was the possibility that the U.S. government could turn a strong competitor into a dominant one.

At the same time, there was concern the government was not benefitting from its purchasing power. While large companies were able to obtain discounts for bulk purchases, the federal government had not channeled its purchasing power to take advantage of such opportunities. The solution, according to the Brooks Act supporters, was to concentrate the purchasing power with one agency so that it could negotiate more favorable prices.

The second problem was the "Passive, partial, or informal types of leadership" in computer equipment and services procurement by the various agencies.[5] Related to this concern, the third problem the Brooks Act was meant to address was the lack of common computing standards among agencies. Incompatible computer data meant that agencies could not share information easily without reformatting and recompiling the data, which at that time was a significant undertaking.

To address these problems, the Brooks Act did the following: 1) concentrated central purchasing authority of automatic data processing resources with the General Services Administration (GSA); 2) tasked the Office of Management and Budget (OMB) with oversight of agency information technology spending; 3) mandated that the National Bureau of Standards (NBS), now known as the National Institute of Standards and Technology (NIST), set standards for information technology.

Over the next thirty years both the technological and political landscape changed dramatically. Eventually, prolonged acquisition cycles and rapid changes in technology diminished the effectiveness of the "one-size-fits-all" approach of the Brooks Act. With procurement delays leading to the implementation of obsolete systems and the increasing diversity of agency needs and missions, calls for management and procurement reform grew. This led to the passage of several laws designed to address a variety of perceived administrative and technical deficiencies.

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[5]U.S. Congress. Senate. Committee on Government Operations. Automatic Data Processing Equipment. Senate Report 938. October 22, 1965, p. 1.

Chief Financial Officers Act of 1990

In 1990, the Chief Financial Officers (CFO) Act (P.L. 101-576) was passed. The purpose of the CFO Act was to improve the efficiency and effectiveness of the federal government by, inter alia, enhancing the financial and general management functions of the Office of Management and Budget (OMB). It was also intended to reduce the amount of money lost to waste, fraud and mismanagement, as well as improve the federal government financial reporting practices. The CFO Act: 1) established a new Deputy Director of Management within the Office of Management and Budget (OMB); 2) created an Office of Federal Financial Management within OMB, headed by a Controller; 3) established CFOs in the major executive departments and agencies.[6]

Government Performance and Results Act of 1993

In an attempt to increase accountability and improve federal management, the Government Performance and Results Act (GPRA) of 1993 (P.L. 103-62) was passed. Its primary goal is to tie together budget planning with performance measures and objectives. Phased in over seven years, GPRA requires agencies to provide OMB and Congress with both long range strategic plans and annual reports detailing performance plans and goals. OMB, in turn, is required to submit a government-wide performance plan with the President's annual budget requests.[7]

Federal Acquisition Streamlining Act of 1994

In 1994, the Federal Acquisition Streamlining Act (FASA, P.L. 103-355) was passed in an effort to reduce barriers and increase the flexibility of procurement procedures. Among its major provisions, FASA authorized the purchase of goods using simplified procedures for procurements of up to $100,000, encouraged reliance on commercial products, and allowed micro-purchases under $2,500 to be completed using purchase cards. It also allowed agencies to discontinue the practice of awarding contracts solely on the lowest bid and instead be able to consider a contractor's past performance, management skills, and workmanship as well. FASA also encouraged the use of fixed-price performance-based contracting to reduce cost overruns.[8]

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[6]See CRS Report 91-533 GOV, *Chief Financial Officers Act of 1990: House Action on Funding Limitations for FY* 1992, by Kathy Dolan.

[7]See CRS Report RS20257, *Government Performance and Results Act: Brief History and Implementation Activities During the 106th Congress*, by (name redacted).

[8]See CRS Report 96-598 GOV, *Civilian Procurement Reform Efforts*, by (name redacted).

Federal Acquisition Reform Act of 1996[9]

In February 1995, oversight hearings regarding suggestions for improving FASA were held. On May 18, 1995, then-Chairman of the House Committee on Government Reform and Oversight, William Clinger, Jr., along with 16 co-sponsors, introduced H.R. 1670, the Federal Acquisition Reform Act of 1995 (FARA). Following House hearings, the bill was voted on and sent to the Senate. Following Senate hearings an amended version was voted on and sent back to the House. The House passed the amended version and it was signed into law by President Clinton on February 10, 1996 as Section D of the National Defense Authorization Act for Fiscal Year 1996, P.L. 104-106. Following in the same spirit as FASA, the provisions in FARA were meant to eliminate procedures, decrease costs, and increase the speed of federal acquisitions. Among its major provisions, FARA increased the threshold amount allowed to use simplified acquisition procedures for certain commercial items to $5,000,000, allowed contracting officers to limit the number of proposals to the greatest number that will "permit an efficient competition among the offerors rated most highly," and allowed agencies to purchase off-the-shelf items without having to go through lengthy and costly contracting procedures.[10]

Summary of Provisions in ITMRA[11]

Introduced in the Senate on June 20, 1995 by Senator Cohen, the Information Technology Management Reform Act (ITMRA, S. 946) focused specifically on information technology management reform.[12] At the time of its introduction, concerns about computer standards had been superceded by concerns about developing and maintaining both the human and technological infrastructure necessary to enable government reforms.[13] The ITMRA was later passed into law as Section E of the National Defense Authorization Act for Fiscal Year 1996, (P.L. 104-106).[14]

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[9]See CRS Report 96-373 A, *Federal Acquisition Reform Act of 1996*, by (name redacted) and CRS Report 96-598 GOV, *Civilian Procurement Reform Efforts*, by (name redacted).

[10]See CRS Report 96-373 A, *Federal Acquisition Reform Act of 1996*, by (name redacted) for a more comprehensive review of FARA's provisions.

[11]Excerpted from CRS Report 97-79 SPR, *Information Technology Reform Act (ITMRA) of 1996*, by (name redacted). Two parts of the law are not addressed in this report: Section 5001 provides the title; Section 5002 provides definitions for information technology, resources, management, and systems under the Act.

[12] This is in contrast to H.R. 1670, which focused on general acquisition reforms for the armed services and civilian agencies.

[13]During the previous Congress, as the ranking minority member of the Subcommittee on Oversight of Government Management of the Committee on Government Affairs, Senator Cohen directed a staff study of major government information technology integration and modernization efforts in progress. See William S. Cohen, *Computer Chaos: Billions Wated Buying Federal Computer Systems, Investigative Report* (Washington: October 12, 1994).

[14] A year after their passage, FARA (H.R. 1670) and ITMRA were renamed the Clinger-

(continued...)

The ITMRA "intended to provide the executive branch flexibility to acquire technologies and services incrementally, enter into modular rather than more costly longer-term contracts, and obtain information technologies and services to fit agency needs." The ITMRA's provisions took effect on August 8, 1996, 180 days after enactment.

Responsibility for Acquisitions

Title LI provides executive branch responsibilities for information technology acquisition and procurement. Subtitle A eliminated GSA's *primary* role in setting policy and regulations for federal information technology acquisition. Subtitle B provides the Director of the OMB with broad responsibilities for coordinating federal information technology policy, including budget policy. OMB is to help federal agencies develop a process for tracking and analyzing the risks and results of all major capital investments in information systems. The results of OMB's efforts shall be reported in the President's annual budget request.

Role of the Federal Agencies

Subtitle C of Title LI has several major provisions. Section 5122 provides that federal agencies design a process by which they can report on capital planning and investment control of information technology acquisition. The Act states that the agency design process should be consistent with financial and budgetary management criteria in each agency. Section 5123 provides for performance and results-based management, in which each agency's information technology system is evaluated in relation to how it helps the agency serve the public and carry out its mission and goals. Section 5124 gives broad authority for each federal agency head to acquire and enter into contracts to obtain the best information technologies where possible, and work with other federal agencies where appropriate. This section also provides that GSA retain its primary role in managing the FTS 2000 federal communications system.

Chief Information Officer

Section 5125, Subtitle A, Title LI mandates the creation of a Chief Information Officer (CIO) in each agency. Sections 5126 and 5127 require that the CIO and Chief Financial Officer (or a comparable official) of each agency develop an accounting, financial, and asset management system which is reliable, consistent and timely. Reports will be provided to the head of the federal agency and any deviations indicating that the acquisition process is not working must be part of this report. Section 5128 calls for interagency cooperation and support in achieving these goals. Subtitles B and C mandate the duties of the CIO: to provide advice and policy recommendations to the agency head; to develop, maintain and facilitate information systems; and to evaluate, assess and report to the agency head on the progress made developing information technology systems.

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[14](...continued)
Cohen Act of 1996 in the fiscal year 1997 Omnibus Consolidated Appropriations Act, P.L. 104-208.

Efficiency, Security, and Privacy

Subtitle D contains a sense of the Congress provision stating that, during the next five years, beginning with FY1996, federal agencies should achieve a 5 percent reduction in cost while achieving a 5 percent increase in the efficiency of agency operations each year. In addition, Subtitle D of Title LI gives the National Institute of Standards and Technology (NIST) of the Department of Commerce responsibility to promulgate standards and guidelines for federal information systems. The head of a federal agency may employ more stringent standards than NIST's if issues of security and privacy protection of sensitive information are involved. These more stringent standards must be cost-effective and conform to NIST requirements.

National Security

Subtitle D, National Security Systems, states that most of the provisions of the law do not apply to national security systems. National security systems are defined as those which involve intelligence activities, cryptography, command and control, weapon systems, or other information systems used in carrying out the defense of the nation. However, routine payroll and finance information systems used by defense and military agencies do not fall under the exemption in the law.

Acquisition Process

Title LII of the Act mandates a simplified, clear, and understandable process of information technology acquisition by federal agencies. Section 5201 provides that the Federal Acquisition Regulatory Council should ensure that the acquisition process achieve these goals.[15] Incremental acquisition of interoperable information technology and modular contracts are stipulated for federal agencies with guidelines and time frames.

Pilot Programs

Title LIII establishes pilot programs. Subtitle A, Section 5301 provides for the conduct of the programs. The Administrator for Federal Procurement Policy of OMB may conduct pilot programs to test alternative acquisition approaches.[16] This section stipulates that no more than two pilot projects can be created, not to exceed $750 million, and operate for no longer than five years. Evaluation and reporting criteria are prescribed.

Subtitle B provides for two specific pilot programs. The first is the Share-in-Savings pilot program. Section 5311 states that the Administrator may authorize up to two federal agencies to enter into no more than five competitive contracts in five years with a private sector source to find solutions to improve the mission or administrative process of each agency. The agency (or agencies) involved

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[15]The Federal Acquisition Regulatory Council was established under 41 U.S.C. Stat. 421.

[16]In consultation with the Administrator for the Office of Information and Regulatory Affairs, within OMB.

in the program can then pay the private sector company an amount equal to a portion of the savings achieved (the share-in-savings).

The second pilot program, under Section 5312, is the Solutions-Based Contracting pilot program. Under this program, up to ten information technology acquisition projects, with an estimated cost of between $25 million to $100 million, may be undertaken by two federal agencies and the Department of Defense. (Of the total funding, $1 million to $5 million will be set aside for small businesses.) The executive branch's acquisition of information technology shall include criteria and objectives defined by the federal government with input from U.S. industry. This is intended to streamline the contractor process. The Act stipulates that an agency use the following factors for the pilot program: simple and clear selection, communication, proposals, evaluation, and system implementation of information technology. A joint public-private working group shall provide a design plan for agencies which participate in this pilot program. The General Accounting Office (GAO) shall monitor and evaluate the program.

Additional Resource Management

Title LIV, Additional Information Resources Management Matters, stipulates that GSA provide, through the Federal Acquisition Computer Network (FACNET), government-wide on-line computer access to information on products and services for federal agencies. This includes basic pricing data and performance features for information technology and systems; updates on pricing data and performance features; and comparison of similar pricing, features, and performance. Other information resource management matters in Title LIV include use of FACNET to streamline procurement procedures, applicability for multiple contract awards, and procedures for withdrawal or termination of any pilot program under FACNET. The Comptroller General of the United States shall evaluate and monitor use of FACNET.

Remaining Provisions

Title LV makes technical language changes to federal law addressing how parties may challenge contract awards. Title LVI provides conforming and clerical amendments to existing laws affected by the ITMRA. Title LVII provides for continuation of all contracts, orders, determinations, construction, and other procedures already undertaken by GSA. None of these titles addresses issues of financial management or budgetary authority of federal information technology acquisition, outside of provisions already in this law.

Policy Issues

For several years since its passage and the departure of its sponsors from Congress, congressional oversight of the implementation of the Clinger-Cohen Act

was relatively light.[17] However, as Congress has become increasingly interested in the Internet and information technology issues, some provisions of the Clinger-Cohen Act have begun to receive more attention.

On October 20, 2000, Senator Thompson, then-Chairman of the Senate Committee on Governmental Affairs, released an investigative report on federal agency compliance with the Clinger-Cohen Act.[18] Senator Thompson's report contained three major findings; 1) federal information technology management was suffering due to a high turnover of agency CIOs; 2) agencies were not complying with capital investment and planning, and performance measures; 3) agencies were not utilizing modular or incremental contracting for major information technology investments. The report also made 12 recommendations to help federal departments and agencies become in full compliance with the Clinger-Cohen Act. Some of these recommendations included providing appropriate authority to agency CIOs, improving information technology management through the use of decision milestones, and providing better data on the proposed benefits of information technology investments.

In June 2001 Senator Thompson released a two volume report on federal management problems, entitled *Government at the Brink: Urgent Federal Government Management Problems Facing the Bush Administration*.[19] One of the four "most pervasive and critical" problems identified in the report was information technology management. Within this area, several items of concern were highlighted included computer security, procurement problems, and aligning technology with the role of the agency. These and related issues are discussed below.

Recruiting, Retaining, and Utilizing Federal IRM Expertise and Leadership

One of the core issues surrounding information technology management reform is the recruitment and retention of personnel with the knowledge and leadership skills to implement necessary changes. The role of the chief information officer (CIO) is especially critical to IT reform. According to OMB, the ideal CIO possesses a combination of technical, financial, and communications skills. The CIO also must be positioned in the organization as a full member of the senior management team to be able to provide the leadership necessary to invest in information technology and execute plans that will support the core mission of the agency.[20] However, there are

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[17] In 1997, Senator William Cohen left Congress to become the Secretary of Defense and Representative William Clinger retired.

[18]Senator Fred Thompson, *Investigative Report of Senator Fred Thompson on Federal Agency Compliance with the Clinger-Cohen Act*, 20 October 2000, [http://www.senate.gov/~gov_affairs/101900_table.htm].

[19]The full report can be found at: [http://www.senate.gov/~gov_affairs/issues.htm].

[20]Office of Management and Budget, Memorandum for the Heads of Executive Departments and Establishments, *Implementation of the Information Technology Reform Act of 1996*, 4 April 1996; Office of Management and Budget, Memorandum for the President's (continued...)

a number of factors that have hampered the anticipated benefits of the CIO mandate in the Clinger-Cohen Act.

One of these factors concerns an agency's ability to recruit a CIO. A shortage of qualified CIOs in both the private and public sector means that many jobs may go unfilled or may be filled with less qualified candidates. Recruitment problems are compounded by salary and compensation disparities between government and private sector opportunities. Industry estimates of salaries of private sector CIOs running comparably sized companies show they may earn $250,000 or more per year. To help address pay concerns for approximately 33,000 federal IT workers in the GS-5 through GS-12 levels, the Office of Personnel and Management (OPM) announced a special salary scale that would result in salaries increases between seven and 33 percent effective January 1, 2001.[21] The lower grade levels, which include entry-level positions for which agencies were having difficulty finding qualified applicants, received larger increases while higher-level positions received smaller increases.[22]

Even when an agency can fill its CIO position, there is little guarantee it will remain filled for long. In 1999, after less than three years since ITMRA went into effect, it was reported that more than half of the original CIOs had left their jobs. Some industry observers claim that government CIO turnover is comparable to that of the private sector, where the average corporate CIO's tenure is less than three years.[23] However, high turnover of top level IT managers can adversely affect larger projects requiring long term planning and oversight. For example, in its September 1998 report to Congress regarding the State Department's information resource management (IRM) practices, the General Accounting Office (GAO) noted that the State Department lacked an integrated information technology infrastructure. The GAO attributed this in part to the absence of clear technical direction and a sense of operational requirements.[24] The GAO also observed that "Since March 1996, State has had two Under Secretaries of Management, one Acting Chief Information Officer, and two Chief Operating Officers."[25] During the same time period the Office of Information Management also underwent two major reorganizations.

More recently in testimony to Congress in May 2000, the GAO levied similar criticism of the Veterans Administration (VA). While noting that the VA had made

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[20](...continued)
Management Council, *What Makes a Good CIO?*, 28 June 1996.

[21]U.S. Office of Personnel Management, "Pay Hike for IT Positions to Help Recruit Skilled Technology Workers," 3 November 2000, [http://www.opm.gov/pressrel/2000/ITSpecialRates.htm].

[22]Collen O'Hara, "IT Workers to Receive Pay Hike," *Federal Computer Week*, 6 November 2000, p. 8.

[23]Nancy Ferris, "Special Report: CIOs on the Go,"*Government Executive Magazine*, [http://www.govexec.com/features/0399/0399s1.htm].

[24]General Accounting Office, *Department of State IRM: Modernization at Risk Absent Full Implementation of Key Best Practices*, GAO/NSIAD-98-242, September 1998.

[25]Ibid., p. 8.

some progress since its 1998 report,[26] the GAO representative said "The department has yet to fill the position of assistant secretary of information and technology, created in June 1998 and intended to serve as VA's chief information officer (CIO)."[27] At the time of this writing, the VA has Acting Principal Deputy Assistant Secretary for Information and Technology, Robert P. Bubniak, serving as the Department's Acting CIO. The GAO representative also observed that the VA "has not developed an overall strategy for re-engineering its business processes to effectively function as 'One VA,' a vision the department has articulated."[28]

Organizational and Budgetary Obstacles. Recruiting and retaining qualified CIOs represents only one part of the issue. Once in place, federal agency CIOs have faced a number of organizational and budgetary obstacles.[29] The Clinger-Cohen Act requires that the CIO report directly to the agency head, and have information resource management as a primary function. However, in many cases this has not occurred in practice. Results from GAO studies of government CIOs within the first few years of the enactment of the Clinger-Cohen Act show that it was not uncommon for CIOs to report to the Deputy Secretary or other agency head subordinates rather than directly to the Secretary. In addition, CIOs frequently wore several hats within their agencies. For example, the first VA CIO was also the department's CFO, assistant secretary for management, and the deputy assistant secretary for budget. The CIO for the Department of Defense was also the Assistant Secretary for Command, Control, Communications, and Intelligence. The departments of Commerce, Education, Health and Human Services, and Justice all combined the responsibilities of the CFO and the CIO into one position. The GAO states that, the role of the CIO is a full-time leadership position requiring complete attention to information resource management issues.[30]

Related to their lack of effective authority are concerns over budgetary control. In a recent survey of federal information technology (IT) managers, several issues were raised regarding the budget process. One of the underlying problems cited is the budgetary short term focus when major IT projects require long term planning and implementation. Federal IT managers also said there was a need to educate Members of Congress and their staff to IT principles and intense competition for resources as contributing factors.[31] Left unaddressed, respondents to this survey believe these

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[26]General Accounting Office, *VA Information Technology: Improvements Needed to Implement Legislative Reforms*, GAO/AIMD-98-154, 7 July 1998.

[27]General Accounting Office, *Information Technology: Update on VA Actions to Implement Critical* Reforms, GAO-T-AIMD-00-74, 11 May 2000, p. 1.

[28]Ibid., p. 1

[29]Allan V. Burman, "Reforms with An E-Gov Twist," *Government Executive Magazine*, 1 September 2001, [http://www.govexec.com/features/0901/0901marketplace.htm].

[30]General Accounting Office, *Chief Information Officers: Ensuring Strong Leadership and an Effective Council*, GAO-T-AIMD-98-22, 27 October 1997.

[31] Association for Federal Information Resources Management (AFFIRM), *IT Acquisition Reform: The Delivery of IT Systems and Services It is Faster and Cheaper But Is it Better?*

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problems may lead to the under funding of projects or budgetary cuts in the middle of a project that undermines its objective.

One area that some observers consider to be a positive development is the Chief Information Officers Council. Established by Executive Order 13011, *Federal Information Technology*, on July 16, 1996, it serves as "the principal interagency forum to improve agency practices on such matters as the design, modernization, use, sharing, and performance of agency information resources."[32] The CIO Council is comprised of the CIOs and Deputy CIOs from twenty-eight federal departments and agencies.[33] The Deputy Director for Management for the Office of Management and Budget (OMB) serves as the Chair of the CIO Council and the Vice Chair is elected from the membership. The CIO Council meets monthly and has six committees to address specific ITM concerns such as enterprise interoperability, security and privacy, and e-government. The committees work to help facilitate the growth of government standards, share best practices, and help agencies work to be in compliance with reform legislation such as GPRA and ITMRA. The Council's materials are sometimes used by the GAO to help inform its methodology when evaluating the ITM progress of various agencies.[34] The Council has also been working with the Office of Personnel Management to develop special pay rates for hard-to-hire IT professionals.[35]

Efficiency and Security

Although critical to the growth and success of many organizations, some industry observers believe that performance measurement of information technology has been an elusive goal for both the public and private sectors. These observers cite the intangible nature of information resources as a contributing factor to the difficulty of measuring the value of information management in concrete terms such as dollars or market shares. According to a recent GAO study of CIOs in leading organizations, there have been weak links between agency goals and information management

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[31](...continued)
Federal Government Program Manager Focus Group Findings, June 1999, [http://www.affirim.org/Pubs/wpapers/ITQquis.htm]

[32][http://www.npr.gov/library/direct/orders/27aa.html]

[33]CIO Council membership also includes two representatives from the smaller federal agencies, liaisons to other executive councils, committees and boards, including the Chair of the Information Technology Resources Board and representatives from the Chief Financial Officers Council and the Procurement Executive Council. In addition, a representative from the Office of Science and Technology Policy and representatives from OMB's Office of Information and Regulatory Affairs are members of the Council. http://www.cio.gov/docs/about.htm

[34]See General Accounting Office, *Information Technology Management: SBA Needs to Establish Policies and Procedures for Key IT Processes*, GAO-AIMD-00-170, May 2000 as an example.

[35]General Accounting Office, *Chief Information Officers: Implementing Effective CIO Organizations*, GAO-T-AIMD-00-128, 24 March 2000.

performance measures.[36] Some experts suggest that one cause of this problem is that the public sector lacks the marketplace mechanism of profit and loss This focus on non-financial program benefits means that information management is still often seen as a support function instead of a strategic activity. The GAO also found that "IT performance measurement is in its infancy and measurement techniques are still evolving, partly due to changes in technology."[37] As a result, required annual performance plans are still in the preliminary stages of development.

According to the GAO, an outgrowth of the difficulties associated with measuring the efficiency and value of information management to an organization is that it puts information management "at a disadvantage when competing for scarce resources, but also when making its case in support of efficiency and effectiveness initiatives."[38] This can adversely affect the ability of agency heads and CIOs to fulfill their responsibility to computer security/information security as outlined in the Paperwork Reduction Act, the Clinger-Cohen Act, and OMB Circular A-130. An October 1999 GAO analysis revealed that "22 of the largest federal agencies were not adequately protecting critical federal operations and assets from computer-based attacks."[39] Among other factors, the GAO identified a lack of leadership, poor security planning, a lack of effective control mechanisms and slow response times to security failures. The report concluded that the failure of agencies to plan and dedicate resources to computer security creates potential risks for critical infrastructure operations such as telecommunications, power distribution, and emergency services.[40]

Information Technology Procurement Reform - "Share-In-Savings"

Of the two pilot programs in ITMRA ("Share-In-Savings" and "Solutions-Based Contracting"), the "Share-In-Savings" program has attracted the most concern. The "Share-In-Savings" pilot projects outlined in the Clinger-Cohen Act of 1996 are *cost avoidance* programs. They are based on a plan in which the contractor pays the initial cost of implementing a new information technology system and is then paid from the savings generated by the new system. The advantage of "share-in-savings" provisions is that the contractor has the potential to make more money on the contract than if the bid was awarded on a fixed-cost basis. The expectation is that this will lead to greater savings for the contracting agency, which in turn will improve efficiency and

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[36]General Accounting Office, *Executive Guide: Maximizing the Success of Chief Information Officers: Learning from Leading Organizations*, GAO/AIMD-00-83, March 2000.

[37]Ibid., p. 37.

[38]Ibid., p. 35.

[39]General Accounting Office, *Information Security: Weaknesses at 22 Agencies*, GAO/AIMD-00-32R, 10 November 1999, p. 1.

[40]General Accounting Office, *Chief Information Officers: Implementing Effective CIO Organizations*, GAO-T-AIMD-00-128, 24 March 2000. See CRS Report RL30153, *Critical Infrastructures: Background and Early Implementation of PDD-63,* for more information regarding computer security and critical infrastructures.

streamline government processes. To realize the benefits of this procurement method, an agency must be able to determine the baseline costs so that savings can be accurately measured.

While "share-in-savings"programs are considered by many to be forward-thinking policies with the potential to reduce spending and improve the quality of services, some experts contend that there are a number of obstacles to successfully instituting such programs. These include being able to determine baseline costs and an agency's willingness to give the contractor more control over the details (so the contractor will feel it has a chance to achieve the cost savings). Some observers have asserted that agencies believe Congress will reduce their appropriations once the cost-savings is verified which, while saving the federal government money, will not provide any direct benefits to them (i.e., a reward). Hence, they believe the agencies have limited incentive to actively pursue such contracts.

Critics of the "share-in-savings" programs also state that they may create disadvantages for small businesses which do not have the capital outlay to bid on large projects. Some agencies, such as the GSA, are cognizant of this issue and try to encourage small business participation through partnering, teaming, and subcontracting. According to Steve Kelman, administrator of the Office of Federal Procurement Reform Policy from 1993 to 1997, a more fundamental reason why "share-in-savings" projects have not flourished is that some IT managers see this as a way to promote projects that did not receive budget approval because they were poor business cases with a low savings potential. This means that projects with the least appeal to contractors have been or are considered for a "share-in-savings" contract.[41]

Encouraged by some Members of Congress, in January 1999 GSA's Federal Technology Service (FTS) began its own pilot program to encourage "share-in-savings" contracts government-wide. The GSA expects these types of provisions to be widely used within the next two years. The GSA's "Share-In-Savings" initiative can be viewed as a response to the slow growth of the technique since it was first endorsed in the 1996 Clinger-Cohen Act. While the GSA initiative is supportive of Clinger-Cohen's larger goal to reduce costs and improve efficiency, it does not conform with another of Clinger-Cohen's specific goals - to eliminate GSA's central role for setting information technology policy.

Share-savings-type contracts have reportedly been used by some Defense Department agencies and Veterans Affairs to procure auditing services to recover overpayments, duplicate payments, and other accounting errors.[42] The Department of Energy also uses savings performance contracts in its Federal Energy Management Program (FEMP). However, the GSA has stated that only the Department of Education has made use of "Share-In-Savings" *information technology procurement*

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[41]Steve Kelman, "Championing Share-in-Savings Contracts," *Federal Computer Week*, 3 July 2000, [http://www.fcw.com/fcw/articles/2000/0703/pol-kelman-07-03-00.asp]

[42]Anne Laurent, "Shifting the Risk," *Government Executive Magazine*, August 1999, [http://www.govexec.com/features/99top/08a99s1.htm]

contracts.[43] In July 2000 the Department of Education awarded a contract to modernize its Office of Student Financial Assistance Programs (OFSAP).[44] OFSAP handles more than $42 billion in student loans and grants annually. By January 2001 approximately $3 million in savings could be attributed to the contract, with a total expected savings estimated at $31.3 million.[45] In December 2001 OFSAP entered into two additional "Share-in-Savings" contracts to continue its modernization effort. The Department of Education anticipates these new contracts will save an estimated $173 million over ten years through consolidating systems and migrating applications to the Internet.[46]

Although adoption of "Share-in-Savings" procurement opportunities has been slow by the departments and agencies, President George W. Bush and some Members of Congress continue to express support for its use. In his fiscal 2002 budget plan, President Bush endorsed the expanded use of "Share-in-Savings" approaches.[47]

In the 106th Congress, Senator Bingaman introduced S.3166, The Information Technology Share-in-Savings Program Improvement Act of 2000, which was referred to the Senate Committee on Governmental Affairs. S.3166 sought to amend the Clinger-Cohen Act to provide "increased incentives to use the share-in-savings program under the Act" and "to ease the use of such program." To this end, S.3166 would have directed the Administrator of GSA to move past the pilot programs and provide general authority to executive agencies to use this procurement method. S.3166 also would have allowed agencies to use retained savings for the acquisition of information technology, without further appropriation, and allowed the savings to "remain available until expended."

In the 107th Congress, bills to facilitate the use of "Share-in-Savings" procurement methods have been introduced in both the Senate and the House of Representatives. In the Senate, on May 1, 2001 Senator Lieberman and 11 cosponsors introduced S. 803, the E-Government Act of 2001, which was referred to the Governmental Affairs Committee.[48] Hearings were held on July 11, 2001. S.803 is a multifaceted bill that seeks to facilitate federal government e-government

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[43]Other parts of the federal government, such as the U.S. Postal Service, have used "Share-in-Savings" for other contracts such as telecommunications. Diane Frank, "Contract a Boon for USPS," *Federal Computer Week*, 27 August 2001, p. 52.

[44]Kenneth J. Cooper, "Education Dept. Contract Lets Firm Share in Savings," *Washington Post*, 31 July 2000, p. A17.

[45]Greg Langlois, "An Equal Slice of Success," *Federal Computer Week*, 14 May 2001, p. 44.

[46]Diane Frank, "Education Expands Share-In-Savings," *Federal Computer Week*, 7 January 2002, p. 40.

[47]The White House, Executive Office of the President, *A Blueprint for New Beginnings: A Responsible Budget for America's Priorities*, Washington, U.S. Government Printing Office, 28 February 2001, p. 181.

[48]For a more comprehensive analysis of S.803, see CRS Report RL31088, *Electronic Government: Major Proposals and Initiatives*, by (name redacted); and CRS Report 30914, *Federal Chief Information Officer (CIO): Opportunities and Challenges*, by (name redacted).

initiatives through many means. Section 210 of S.803 contains language identical to that found in S.3166, introduced by Senator Bingaman in the 106th Congress.

In the House of Representatives, on July 11, 2001, Representative Turner and 36 cosponsors introduced H.R. 2458, an identical version of S.803, which was referred to the House Committee on Government Reform. On November 1, 2001, Representative Davis, Chairman of the House Committee on Government Reform Subcommittee on Technology and Procurement Policy, held a hearing on services acquisition reform, at which he announced his intention to introduce the Services Acquisition Reform Act (SARA) in the near future.[49] In his opening statement, Representative Davis stated that Title III of SARA will focus on enhancing incentives and authorization for the use of "innovative contract vehicles," including "Share-in-Savings" contracts.[50]

Reverse Auctions

The relatively lackluster performance of the pilot procurement programs authorized by the Clinger-Cohen Act has not only raised congressional questions about how to "fix" them, but also what other means can be used to improve procurement practices and save costs. A new option that has recently emerged is the use of reverse auctioning over the Internet. In a reverse auction, also sometimes referred to as a private auction, companies openly bid against each other in real time to win a government contract. The purpose of reverse auctions is to drive prices down to market levels. Because reverse auctions emphasize price, these types of auctions are appropriate only where price/performance tradeoffs are clear and easily assessed. On May 5, 2000 the Navy conducted the federal government's first reverse auction over the Internet. Proponents say that not only do reverse auctions offer potential cost savings (the Navy estimated it saved 28.9 percent over past prices) they are also much quicker. The May 2000 reverse auction lasted 51 minutes. A second reverse auction held on June 30, 2000 lasted 30 minutes, achieving an estimated cost savings of 22 percent. In contrast, standard procurement processes involving sealed bids or competitive proposals can take weeks to complete. The Navy plans to hold two more reverse auctions in August 2000. The GSA is also embracing the use of reverse auctions. It plans to have a new web site, Buyers.gov, available by the end of August 2000. Buyers.gov is designed to facilitate not only reverse auctions, but also eFAST and Quick Quote procurement strategies.[51]

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[49]Jason Miller, "Davis Plans Services Buying Reform Bill," *Government Computer News*, 19 November 2001, [http://www.gcn.com/20_33/news/17524-1.html].

[50]See the Subcommittee's Web site for hearing statements by the Chairman and witnesses at: [http://www.house.gov/reform/tapps/hearings/11-1-01/opening.htm].

[51]eFAST "provides the capability of aggregating government purchasing power for commonly purchased products." Quick Quote "offers the capability to issue a Request For Quote (RFQ) and receive quotes from selected sources of supply." See [http://www.buyers.gov/welcome.html] for more detail.

Federal CIO[52]

An early draft of the Clinger-Cohen Act contained a provision for a national CIO to be located in the OMB. That provision was dropped from the final version of the bill. However, the idea of creating a federal CIO has gained renewed interest.

During the 106th Congress, legislation was introduced in the House calling for the establishment of a federal CIO position. One bill (H.R. 4670, Turner) would have created a federal CIO in an office outside of OMB, established a CIO Council by law rather than by executive order, and made the CIO head of the Council. A second bill (H.R. 5024, Davis) would have created a White House Office of Information Policy to be headed by a federal CIO, with a broad mandate to create federal IT policy, a staff, an authorized budget to carry out the duties of a federal CIO, and the power to coordinate and execute government-wide information security efforts. Neither bill was passed in the last Congress; however, these issues are being revisited in the 107th Congress.

On May 1, 2001, Senator Lieberman introduced S. 803, the E-Government Act of 2001. Among its many provisions, S. 803 calls for the establishment of a federal CIO, to be appointed by the President and confirmed by the Senate. The federal CIO would be in charge of a proposed Office of Information Policy and would report to the Director of OMB. S. 803 would also establish the CIO Council by law with the federal CIO as Chair. This bill has been referred to the Governmental Affairs Committee, which held a hearing on the bill on July 11, 2001. Also on July 11, 2001, Representative Turner introduced an identical companion bill to S. 803, H.R. 2458, the E-Government Act of 2001. This bill has been referred to the Committee on Government Reform.

On June 14, 2001, OMB announced the appointment of Mark Forman to a newly created position, the Associate Director for Information Technology and E-Government.[53] According to the OMB announcement, as "the leading federal e-government executive," the new Associate Director will be responsible for the e-government fund, direct the activities of the CIO Council, and advise on the appointments of agency CIOs. The Associate Director will also "lead the development and implementation of federal information technology policy." The new position will report to the Deputy Director of Management at OMB, who in turn will be the federal CIO.

Chief Technology Officer (CTO)

While much attention has been paid to creating and filling the position of CIO in federal agencies, there has been very little discussion about chief technology

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[52]For a more comprehensive analysis of the federal CIO issue, see CRS Report 30914, *Federal Chief Information Officer (CIO): Opportunities and Challenges*, by (name reda cted).

[53]Office of Management and Budget, "Mark Forman Named Associate Director for Information Technology and E-Government," 14 June 2001, [http://www.whitehouse.gov/omb/pubpress/2001-13.html].

officers (CTO). CTOs are common in private sector companies that create technology for their customers, but have only recently gained notice in the public sector. The differences between a CIO and a CTO are less clear as both positions continue to evolve with changing business dynamics. However, the prevailing industry view is that the CTO is generally focused outward, on the company's impact on its customers.[54] This is the result of the CTO's rise to prominence in "dotcom" companies, whose very existence depends on their ability to channel the benefits of information technology toward their clients. In contrast, CIOs reflect the more traditional inward focus on using information technology procurement to streamline internal processes. In practice, the responsibilities of the CIO and CTO are often combined into one position.

At the time of this writing, Congress has not addressed the possible utilization of the position of CTO as it has for CFOs and CIOs. Nevertheless, as interest in e-government grows and agencies are focusing more on delivering services to citizens via the Internet and other technologically based means, the CTO concept has gained currency. A few agencies have already created a CTO position, including the U.S. Postal Service (USPS), the GSA's Federal Technology Service, the Air Force Research Laboratory, and the Defense Information Systems Agency. Consequently, it is possible that other agencies may institute the position, or that the issue may appear in the near future as part of the larger debate to reform government information technology management.

In January 2002, Norman Lorentz began work as the first CTO at OMB. Lorentz, a former USPS CTO, reports to Mark Forman. Lorentz has been tasked to lead and coordinate multiple efforts to identify and develop the technological architecture needed to support federal government e-government and other information technology initiatives.[55]

The Clinger-Cohen Act and E-Government

One of the main objectives of the Clinger-Cohen Act was to improve information technology planning and procurement so that the federal government could take greater advantage of advances in technology. As e-government initiatives continue to proliferate and information technology becomes more central to government operations, achieving the goals and objectives associated with the Clinger-Cohen Act may become more critical.[56] The future growth and evolution of e-government will depend, in part, on the ability of departments and agencies to adapt their planning and

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[54]Teri Robinson, "Rise of CTO May Strengthen CIOs," *InternetWeek*, 20 March 2000, [http://www.internetwk.com/transform/transform032000-2.htm]

[55]Gail Repsher Emery, "OMB Gets First Chief Technology Officer," *Washington Post*, 11 January 2002, [http://www.washtech.com/news/govtit/14625-1.html]; Diane Frank, "Bush Hires First CTO," *Federal Computer Week*, 11 January 2002, [http://www.fcw.com/fcw/articles/2002/0107/web-cto-01-11-02.asp].

[56]Allan V. Burman, "Reforms With An E-Gov Twist," *Government Executive Magazine*, 1 September 2001, [http://www.govexec.com/features/0901/0901marketplace.htm].

decision procedures. However, the evolutionary nature of e-government suggests that the reforms themselves may also need to be revisited and revised as events change.

Related Reading

CRS Report RL30745, *Electronic Government: A Conceptual Overview*, by (name redacted).

CRS Report RL31088, *Electronic Government: Major Proposals and Initiatives*, by (name redacted).

CRS Report RL30914, *Federal Chief Information Officer (CIO): Opportunities and Challenges*, by (name redacted).

CRS Report RS20257, *Government Performance and Results Act: Brief History and Implementation Activities*, by (name redacted).

CRS Report RS20938, *Performance Management and Budgeting: Benchmarks and Recent Developments*, by (name redacted).

CRS Report RL31057, *A Primer on E-Government: Sectors, Stages, Opportunities, and Challenges of Online Governance*, by (name redacted).