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

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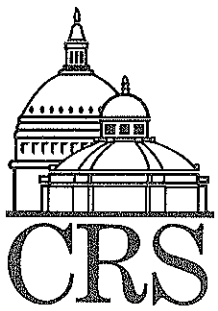

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Government Information Technology Management: Past and Future Issues (The Clinger-Cohen Act)

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 The ITMRA repealed the Automatic Data Processing Act of 1965, or as it is better known, the Brooks Act.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.

Four 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. Only one such contract has been recently awarded by the Department of Education. 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 national CIO, and the potential need for chief technology officers (CTO) as interest in e-government and the delivery of services to citizens via the Internet grows.

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

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 e-government and the delivery of services to citizens via the Internet grows.

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

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[1] See CRS Report RS20257, *Government Performance and Results Act: Brief History and Implementation Activities During the 106th Congress,* by Genevieve J. Knezo.

[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.

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.[4] 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.

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

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

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.[5]

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.[6]

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.[7]

Federal Acquisition Reform Act of 1996[8]

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

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

[6] See CRS Report RS20257, *Government Performance and Results Act: Brief History and Implementation Activities During the 106th Congress*, by Genevieve J. Knezo.

[7] See CRS Report 96-598 GOV, *Civilian Procurement Reform Efforts*, by Stephanie Smith.

[8] See CRS Report 96-373 A, *Federal Acquisition Reform Act of 1996*, by Michael V. Seitzinger and CRS Report 96-598 GOV, *Civilian Procurement Reform Efforts*, by Stephanie Smith.

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.[9]

Summary of Provisions in ITMRA[10]

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.[11] 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. The ITMRA was later passed into law as Section E of the National Defense Authorization Act for Fiscal Year 1996, (P.L. 104-106).[12] 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.

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[9] See CRS Report 96-373 A, *Federal Acquisition Reform Act of 1996*, by Michael V. Seitzinger for a more comprehensive review of FARA's provisions.

[10] Excerpted from CRS Report 97-79 SPR, *Information Technology Reform Act (ITMRA) of 1996*, by Glenn J. McLoughlin. 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.

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

[12] A year after their passage, FARA (H.R. 1670) and ITMRA were renamed the Clinger-Cohen Act of 1996 in the fiscal year 1997 Omnibus Consolidated Appropriations Act, P.L. 104-208.

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.

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.[13] 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.[14] 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 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

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

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

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

Since its passage and the departure of its sponsors from Congress, congressional oversight of the implementation of the Clinger-Cohen Act has been relatively light.[15] However, as Congress has become increasingly interested in the Internet and information technology issues, it is possible that some provisions of the Clinger-Cohen Act may receive attention during the 107th Congress. Some of these 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.[16] However, there are a number of factors that have hampered the anticipated benefits of the CIO mandate in the Clinger-Cohen Act.

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

[16] Office of Managment 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 Management Council, *What Makes a Good CIO?*, 28 June 1996.

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. The Office of Personnel and Management (OPM) is working on a study of federal IT salary rates and is expected to make its recommendations the creation of additional salary bands in fall 2000.

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.[17] 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.[18] 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."[19] 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 some progress since its 1998 report,[20] 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)."[21] 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

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

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

[19] Ibid., p. 8.

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

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

overall strategy for re-engineering its business processes to effectively function as 'One VA,' a vision the department has articulated."[22]

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. 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.[23]

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.[24] Left unaddressed, respondents to this survey believe these 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."[25] The CIO Council is comprised of the CIOs and Deputy CIOs from twenty-eight federal departments and

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[22] Ibid., p. 1

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

[24] 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? Federal Government Program Manager Focus Group Findings*, June 1999, [http://www.affirim.org/Pubs/wpapers/ITQquis.htm]

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

agencies.[26] 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.[27] The Council has also been working with the Office of Personnel Management to develop special pay rates for hard-to-hire IT professionals.[28]

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 performance measures.[29] 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."[30] 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

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[26] 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

[27] 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.

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

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

[30] Ibid., p. 37.

resources, but also when making its case in support of efficiency and effectiveness initiatives."[31] 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."[32] 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.[33]

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 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.

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[31] Ibid., p. 35.

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

[33] 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.

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.[34]

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.[35] The Department of Energy also uses savings performance contracts in its Federal Energy Management Program (FEMP). However, the GSA has stated that the only "Share-In-Savings" information technology procurement example is a recent contract awarded by the Department of Education to modernize its Office of Student Financial Assistance (OFSA).[36] OFSA handles more than $42 billion in student loans and grants annually.

Emerging Issues

In addition to the issues discussed above, there is a growing number of new concerns that are beginning to develop on the policy horizon. Some of these issues are a direct outgrowth of the successes and failures of the Clinger-Cohen Act while others are part of the growing interest in e-government.

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[34] 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]

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

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

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.[37]

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 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.[38] 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

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[37] 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.

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

position, including the U.S. Postal Service, 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.

Federal CIO

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. In late July, 2000, Representative Tom Davis introduced the Federal Information Policy Act (FIPA) of 2000 (H.R. 5024). In addition to creating a CIO for the federal government, FIPA's purpose is to coordinate existing information resources management laws, foster "opportunities for innovation," and promote "effective management oversight of related information security risks." FIPA would also establish the Office of Information Policy (OIP) in the Executive Office of the President to be headed by the chief information office of the United States. OIP's mandate would be to "harmonize and centralize information resources management powers currently allotted to the Office of Management and Budget (OMB)." It would also institutionalize the federal CIO council by law instead of by executive order and require it to report annually to Congress. Calls for a federal CIO, or "IT Czar," have increased over the past few years. It is unclear whether there is a consensus on this approach. However, with the increased attention being paid to federal information technology management, the issue may be addressed in the 107th Congress.