

The Association for Federal Information Resources Management (AFFIRM) was founded in 1979 with the goal of advancing the management of Federal IRM. AFFIRM's membership is composed of individuals from the Federal Government, industry, and academia. AFFIRM's focus is on senior management issues of interest to the Federal Government. Additional information is available on the Internet at www.affirm.org.

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Dear Colleague:

For the past three years, the Association for Federal Information Resources Management (AFFIRM) Emerging Issues Forum

has conducted annual surveys of the senior Federal information resources management (IRM) community to determine the most critical challenges faced by Federal Chief Information Officers (CIO). We have also surveyed the technologies considered most critical to implementing IT-based solutions.

The participants in the survey process represent a broad spectrum of executive and management levels in the Federal IRM

Community. As such, the survey results do not solely represent the thinking of Federal CIO's, but rather a consensus of the broader Federal IRM community. Nonetheless, AFFIRM hopes the survey results prove useful to individual CIO's, and to the CIO Council, in understanding the key challenges they face in implementing the Clinger-Cohen Act of 1996. We will continue to sponsor other similar studies to advance the state of knowledge and practice in managing Federal information resources and solicit your comments.

I want to personally thank the Emerging Issues Forum committee members and the many survey respondents for their participation.

Alan Balutis

President

AFFIRM

AFFIRM Emerging Issues Forum

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TABLE OF CONTENTS

AFFIRM President's Letter i

I. Introduction 1

II. Survey Methodology and Responses 1

III. CIO Challenges: Results and Discussion .2

IV. Critical Technologies: Results And Discussion 12

V. Conclusion 13

Appendix A – Third Annual CIO Challenges Survey 14

LIST OF FIGURES

Figure 1 - CIO Challenges 1996/1997/1998 Survey Responses Comparisons 4

Figure 2 - Critical Technologies 1996/1997/1998 Survey Responses Comparisons 13

I. Introduction

The information technology community continues to undergo a significant transition started

with passage of the Clinger-Cohen Act, formerly known as the Information Technology Management Reform Act (ITMRA) of 1996, and the establishment of the CIO position within departments and major agencies. This is the third annual Association for Federal Information Resources Management (AFFIRM) survey. It explores how the top ten challenges facing federal CIOs today, as viewed by senior federal government IRM officials and staff, might have changed from twelve months ago as well as any changes in the priority of the top ten critical technologies.

II. Survey Methodology and Responses

Approximately 270 surveys were distributed to senior information technology officials and managers at Federal departments and agencies. Seventy-six completed surveys (28%) were returned. A copy of the survey instrument is included in Appendix A. The detailed results of the challenges surveyed are illustrated in Figure 1 in Section III and the results of the critical technologies question are presented in Figure 2 in Section IV. Each of these illustrations also shows a comparison between this year's responses and the two prior years.

III. CIO Challenges: Results and Discussion

Results Summary

The top ten out of twenty-six survey challenges in descending order of importance were (the number of responses for each issue out of 76 surveys returned is listed in parentheses):

1. Measuring IT contribution to mission performance (30)
- 1.2. Ensuring Year 2000 operations (28)
- 2.3. Formulating or implementing an agency IT architecture (27)
4. Implementing IT capital planning and investment management across the agency (26)
5. Aligning IT and organizational goals (24)
6. Using IT to improve service to customers/stakeholders/citizens (16) and obtaining adequate resources (16); and, identifying specific CIO/IRM measures/outcomes under the GPRA and

reporting on the results (16)

7. Controlling IT budgets (14)

8. Integrating or consolidating program/administrative information systems (13); and, ensuring public access to information (13)

It is interesting to note that the first five of these challenges closely correlate with the top five management issues as described in the 1998 GartnerGroup1 annual survey of 700 CIO members from North America, Europe and Asia/Pacific. Please see the following table:

1998

AFFIRM Challenge Gartner Management Issues

1. Measuring IT contribution to missionperformance. 1. Aligning IT and business goals.

2. Ensuring Year 2000 operations. 2. Strategic planning.

3. Formulating or implementing an agency IT architecture. 3. Year 2000 implementation.

3.Implementing IT capital planning and investment management across the agency. 4. IT organizational strategies.

5. Aligning IT and organizational goals. 5. Electronic commerce business strategies, and IT measurement performance metrics.

B. Discussion

The significance of these top ten challenges is discussed in the following paragraphs. The previous year's survey ranking is shown in parentheses. There is also a brief discussion of some of the challenges that dropped out of the top ten from the previous year's survey.

When comparing last year's survey results to this year's, it is interesting to note that the top five challenges from 1997 remained the same although in a slightly different order (please see Figure 1). Other than order of rank, the top five CIO Challenges for 1998 have been in the top five for the last three surveys with the exception of "Ensuring Year 2000 operations" which placed tenth in 1996. Overall, eight of last year's top ten challenges made it into this year's top ten. Those that fell out were: Providing effective IT infrastructure

and related services; championing business process reengineering as a precursor to IT decisions; developing agency-wide IT accountability; and implementing cross-government IT projects. In spite of the recent award of two major Seat Management contract vehicles by GSA and NASA, managing infrastructure cost by implementing Seat Management was seen as important by only five responders and was ranked tied for 24th. New to the top ten was controlling IT budgets. Two new challenges, identifying specific CIO/IRM measures/outcomes under GPRA and reporting on the results and ensuring public access to information were also ranked in the top ten.

Figure 1 - CIO Challenges 1996/1997/1998 Survey Responses Comparisons

1. Measuring IT Contribution To Mission Performance

(1997 – 4th).

The Government Performance and Results Act of 1993 requires all Federal agencies to develop strategic plans, annual performance plans that are tied to budgets, and to report actual results against these performance plans.

The Paperwork Reduction Act of 1995 further requires agencies to develop and maintain a strategic IRM plan

that describes how information resources management activities help accomplish agency missions; to establish goals for improving IRM's contribution to program productivity, efficiency, and effectiveness; to develop

methods for measuring progress towards these goals; and to delineate clear roles and responsibilities for achieving those goals. To be successful, IT must contribute to the accomplishment of the agency mission.

Executive and Legislative oversight organizations are continuing to take this requirement very seriously. This increased pressure to comply with these requirements is reflected in it being the number one challenge.

2. Ensuring Year 2000 Operations (1997 – 3rd).

Not surprisingly, ensuring Year 2000 operation continued to be one of the most critical challenges in this year's survey. More of a management than technical challenge, IT officials face both the shrinking time remaining and

the relatively large investment in resources required to fix the problem. Last year's survey pointed out the need for the CIO to communicate the urgency of this problem to other senior executives, identifying the needed

resources, and monitoring progress. This appears to have occurred in many instances. The appointment of John

Koskinen as Chairman, President's Council on the Year 2000 Conversion, has resulted in a much needed

visibility boost both nationally and internationally. However, which agencies will succeed at protecting all of their critical software and which will not is still an open issue.

As part of their Year 2000 solution, IT managers must inevitably consider their legacy systems.

Though it did not make the top ten challenges, the challenge of "Managing or replacing legacy systems" is to become more important with each passing month. Over the last three surveys, this challenge has jumped from twentieth position to sixteenth to now being tied for twelfth position. This challenge appears to be paralleling the importance of "Ensuring Year 2000 operations."

3. Formulating Or Implementing An Agency IT Architecture

(1997 – 1st).

The IT infrastructure is the enabling base for providing IT capabilities and includes architectures, networks, and processing platforms. The CIO is responsible for facilitating the development, implementation and maintenance of a well thought out and integrated agency information technology architecture, which includes the standards required to ensure that information flows seamlessly and that functions/systems can be rapidly deployed in a cost-effective manner. With the increased use of shorter duration, task order technical support contract vehicles, an absence of a sound IT architecture can result in a fragmented and costly IT system implementation. It is not surprising that the criticality of the formulation of such an architecture was viewed by survey respondents as a very important challenge facing the CIO today, resulting in relatively little priority change from last year's survey. Recognizing this, the Federal Government CIO Council recently adopted a standard IT architecture.

4. Implementing IT Capital Planning and Investment Management Across

The Agency (1997 – 2nd).

The Clinger-Cohen Act of 1996 requires that the head of each agency establish an effective and efficient capital planning and investment control process for selecting and managing its major investments in information systems and evaluate the results of these investments. It also prescribes minimum requirements for accomplishing this. Few agencies have succeeded in implementing effective IT capital plans thus far. However, progress is being made. The results of this survey indicate that this will continue to receive significant attention

from agency and oversight executives.

5. Aligning IT And Organizational Mission Goals (1997 – 5th).

A key component of successful IT programs is the close alignment of organizational mission goals with the necessary IT systems. A misalignment between the two will make the probability of IT's contribution to an Agency's mission more unlikely. A strategic plan that defines the missions, goals, objectives, and strategies of an agency provides the basis for aligning an agency's organization and budget structure with missions and objectives. The IRM portion of the plan should identify the major IRM activities to be undertaken to accomplish the desired agency missions and goals. As with some of the other top ten challenges, this issue illustrates how important it is for the CIO to establish a well defined IT baseline and target architecture, and to clearly articulate how these IT resources will enable the agency to achieve its mission.

6. Using IT To Improve Service To Customer/Stakeholders/Citizens

(1997 – 7th); Obtaining Adequate Resources; And Identifying Specific

CIO/IRM Measures/Outcomes Under the GRPA And Reporting On The

Results. (Three Challenges Tied For 6th).

a. Using IT to improve service to customers/stakeholders/citizens: Over the last two to three years, the exponential growth of web technology has resulted in high public expectations of the benefits to be derived from the use of information technology. End users have already benefited from the increased availability of information from previously unavailable legacy databases and paper-intensive systems. The demand for instantaneous access to information and the ability to communicate with the government electronically is increasing. It is the CIO who is charged with delivering these service improvements. It is clear from the responses to the top ten technologies that the Internet/Intranet/web and network computing are seen as critical to meeting this challenge. And, the survey results also indicate the challenge of advancing security technology to meet the privacy and security needs of the citizens as well as each agency.

b. Obtaining adequate resources: The federal government, like many other government entities and businesses, is continuing a period of downsizing, a period in which they are expected to be able to do more with less. Federal government IT budgets on average have remained the same for

the last few years (in reality reflecting a decreasing budget when accounting for inflation); 250,000

employees have been cut. Yet, each department/agency has a mission to be carried out.

Clinger-Cohen has not changed that. There is high expectation that information technology will enable an increase in services and service quality in spite of these reductions. Sixteen respondents

felt obtaining adequate resources was one of the five most significant challenges to the CIO.

Without more specific definition, it is difficult to ascertain whether it was financial or human resources that were of the greatest concern. Clearly, both the reduction in available funds and the lack of trained IT professionals continues to be a pressing issue. Both people and dollars are becoming more scarce. The robust U.S. economy, good for many, threatens the ability of the federal government to obtain and retain its human IT resources. In this difficult environment, the CIO is tasked with identifying and obtaining adequate IT resources. It is of interest to note that the

best the challenge of "Hiring and retaining skilled professionals" could muster was a tie for 21st place. (The format of the survey might have resulted in a lower rating for this challenge.)

c. Identifying specific CIO/IRM measures/outcomes under the GPRA and reporting on the results: This is the first time the challenge of identifying and reporting specific CIO/IRM measures/outcomes under GPRA has been included in the survey. Increased competition for funds and pressure from oversight agencies to comply with GPRA requirements will continue to put

pressure on the CIO to be able to both measure and show positive outcomes for the dollars their agencies are investing in information technology.

7. Controlling IT Budgets (1997 – 21st)

None of the top five challenges can be met without the implementation of appropriate budget management

mechanisms. Clearly, the need to control IT budgets in light of shrinking funding, Year 2000 remediation

expenditures and increased scrutiny by oversight agencies is of paramount importance to the CIO. This challenge

jumped 12 positions from last year into ninth position, its first time in the top ten challenges.

8. Integrating Or Consolidating Program/Administrative Information Systems (1997 – 10th) And Ensuring Public Access To Information (New) (Tied For 10th)

a. Integrating or consolidating program/administrative information systems: The discussion above has highlighted the pressing need to find ways to do more with less. The CIO's success as

the overall manager of an agency's IT strategic plan and the ability of the agency to obtain adequate funding require a constant effort to find ways to maximize the efficiency of existing IT administrative and mission systems. Critical technologies such as the Web, knowledge management, EC/EDI and groupware, all top ten critical technologies, will provide the enabling foundation necessary to achieve the desired results.

b. Ensuring public access to information: Ensuring public access to information has increased the demand for information as well as increased the pressure to satisfy this need through self service. This challenge is further compounded by an increased threat to security and privacy with an accompanying awareness, explaining why security was ranked as the number one critical technology elsewhere in this paper.

IV. Critical Technologies: Results And Discussion

The survey recipients were asked to select five items from a list of twenty-seven critical technologies that they considered the most important to the Federal CIO in performing the CIO function. The results of this survey question are shown in Figure 2 as well as the ranking for the prior year. The application of knowledge management, as the third most critical technology, is perhaps seen as the solution to some major agency IT challenges. The top ten critical technologies were, in descending order of importance, as follows (the 1997 ranking for each is listed in parentheses):

1. Security technology (1997 - #2).
2. Internet/Intranet/Web/Network computing (1997 - #1).
3. Knowledge management (new).
4. Data warehousing (1997 - #3).
5. EC/EDI (1997 - #5).
6. Year 2000 remediation and test tools (new).
7. Firewalls (new).
8. Groupware (1997 - #12).
9. Next generation Internet (new).
10. Mobile computing (1997 - #6).

Figure 2 - Critical Technologies 1996/1997/1998 Survey Responses Comparisons

Falling out of the top ten from 1996 were client/server computing, workflow, distributed computing, imaging, e-mail, and JAVA/HTML.

V. Conclusion

The top five challenges from 1997 remained the same in 1998. Other than rank order, these five CIO challenges have been in the top five for the last three surveys with the exception of "Ensuring Year 2000 operations." Also, eight of last year's top ten challenges made it into this year's top ten. Apparently, the CIO has been faced with the same challenges for some time. It will be interesting to see if Implementing Seat Management and Recruiting/Retaining Qualified Staff increase in importance in future surveys.

Security technology continues to be a critical requirement to ensure the agency's ability to share information with the public and other agencies in a safe environment. Also, the need to fulfill capital investment requirements and to leverage the agency corporate memory and information has resulted in an increased interest in knowledge management.

APPENDIX A

THIRD ANNUAL CIO CHALLENGES SURVEY

BACKGROUND: With the passage of the Clinger-Cohen Act of 1996, the position of Chief Information Officer was formally established for departments and major agencies within the federal government. In August 1996 and 1997, the Association for Federal Information Resources Management (AFFIRM) conducted annual surveys of senior executives within the federal IT/IRM community to help identify and report the key challenges facing the federal CIO community. AFFIRM continues this tradition with its "Third Annual CIO Challenges Survey." We believe the results of this survey, especially when compared to past surveys, will contribute to a better understanding of the rapidly changing information technology environment.

HOW TO RESPOND: Please select the five items in the CIO CHALLENGES section you consider to pose the most difficulty, and the five items in the CRITICAL TECHNOLOGIES section that you consider to be the

most important to the federal CIO community in performing the CIO function over the next year.

To select an item, check the box to the left or circle the item. You may respond by:

1.Replying to this e-mail message (paulwohllen@gsa.gov) and including the requested information in your reply message; or 2) faxing your completed survey form to CIO Challenges Survey, attn: Paul Wohlleben at (202) 208-7087.

TO RECEIVE A COPY OF THIS REPORT: Please provide your name and address in the following section if you would like to receive a copy of the final AFFIRM report.

Your confidentiality will be respected - survey responses will not be attributed to individual survey participants.

Name:

Title:

Department/Agency:

Street Address:

City/State/ZIP:

CIO CHALLENGES (select only five)

(Place an 'X' in the space provided.)

___ Aligning IT and organizational mission goals

___ Integrating or consolidating program/administrative information systems

___ Using IT to improve service to customers/stakeholders/citizens

___ Managing or replacing legacy systems

___ Formulating or implementing an agency IT architecture

___ Gaining a seat at the senior management table

- ___ Building effective relationships with agency senior executives (agency head, CFO, etc.)
- ___ Controlling IT budgets
- ___ Obtaining adequate resources
- ___ Shaping realistic senior management expectations
- ___ Assessing and developing agency IT competence (training and education)
- ___ Providing effective IT infrastructure and related services
- ___ Measuring IT contribution to mission performance
- ___ Implementing cross-government IT projects
- ___ Achieving a CIO Council that provides timely, effective, action-oriented leadership for federal IT activities and services
- ___ Implementing digital government to improve service to the citizen
- ___ Engaging senior executives on IT strategic directions
- ___ Developing agency-wide IT accountability
- ___ Managing infrastructure cost by implementing Seat Management
- ___ Hiring and retaining skilled professionals
- ___ Ensuring public access to information while implementing the necessary system security
- ___ Preventing unauthorized system intrusions (hackers; terrorists, etc.)
- ___ Championing business process reengineering as a precursor to IT decisions
- ___ Ensuring Year 2000 operations
- ___ Capturing, organizing and making accessible Agency knowledge and expertise
- ___ Implementing IT capital planning and investment management across the agency
- ___ Identifying specific CIO/IRM measures/outcomes under the Government Performance Measurement & Results Act and reporting on the results.

CRITICAL TECHNOLOGIES (select only five)

Data warehousing

EC/EDI

Internet/Intranet/Web/Network computing

Firewalls

Year 2000 remediation and test tools

Operating systems

E-mail

Firewall

Groupware

Middleware

Mobile communications

Mobile computing

Next generation Internet

EIS/DSS

CASE

Relational databases

Object databases

Distributed computing

Client-server computing

Imaging

Workflow

ATM

___ Voice integration

___ Online analytical processing (OLAP)

___ Security technology

___ JAVA/HTML

___ Knowledge management

