Report on the Establishment of a Governmentwide Information Technology Training Program

Submitted to
The Committee on Government Reform
of the U.S. House of Representatives
and
The Committee on Governmental Affairs of the U.S. Senate

Prepared by
The U.S. Office of Personnel Management

United States Office of Personnel Management
Kay Coles James, Director
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OFFICE OF THE DIRECTOR

A MESSAGE FROM THE DIRECTOR OF THE OFFICE OF PERSONNEL MANAGEMENT

I am pleased to present the Office of Personnel Management's (OPM's) *Report on the Establishment of a Governmentwide Information Technology (IT) Training Program.* This report was developed in accordance with the reporting requirement established by section 209(f) of Public Law 107-347, the E-Government Act of 2002.

This report reviews and assesses the adequacy of existing Governmentwide IT training programs in terms of their capability to address the Clinger-Cohen core competencies, provides recommendations for a Governmentwide IT training framework, and identifies and discusses costs where appropriate. This report also makes recommendations for using the IT Exchange Program (5 U.S.C. chapter 37) to support Governmentwide IT training.

This report highlights OPM's commitment to build the Federal Government's capacity to effectively manage the Federal IT workforce through a centralized capability for workforce assessment and training development opportunities.

Kay Coles James
Director

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TABLE OF CONTENTS

APPENDICES

BACKGROUND

Section 209 of the E-Government Act of 2002 requires the U.S. Office of Personnel Management (OPM), in consultation with the Chief Information Officers (CIO) Council and the Administrator of the General Services Administration (GSA), to report on the establishment of a Governmentwide Information Technology (IT) training program. In this report, OPM has discussed the following:

- The adequacy of existing Governmentwide information technology (IT) training programs available to Federal employees on a Governmentwide basis;
- Recommendations on how to improve or design and establish a Governmentwide IT training program for Federal employees;
- Recommendations for using the IT Exchange Program (5 U.S.C. chapter 37) to support Governmentwide IT training; and
- Estimated implementation and operating costs of these recommendations.

OPM submitted an interim report on June 6, 2003, that provided an overview of existing Governmentwide IT training programs.

SCOPE OF REPORT

This report reviews and assesses the adequacy of existing Governmentwide information technology (IT) training programs in terms of their capability to address the Clinger-Cohen core competencies. The report recommends linking the existing Governmentwide IT training programs into a consolidated Governmentwide IT Training framework which can improve the Federal Government's capacity to effectively manage the Federal IT workforce through this centralized training framework. Additionally, this report will provide recommendations as to how the new Information Technology Exchange Program (ITEP) can augment and enhance training for the Federal IT workforce. For the purposes of this report, we have assessed those Governmentwide IT training programs that are:

- Not agency specific, but are available, on an equal basis, to Federal employees across Government;
- Administered by a Federal Government agency;
- Based on a curriculum with a clearly defined course of instruction; and finally and most importantly
- Focused on the Clinger-Cohen core competencies, which the Federal CIO Council identified as required for the Federal IT workforce.

Competency Needs of the Federal IT Workforce

Federal agency CIOs provide training to their individual IT workforces based on immediate or anticipated competency needs relevant to their missions, and it is understood that agency IT training programs will address agency-specific IT training needs. While IT needs vary across agencies, the competency needs of the Federal Government's IT workforce as a whole have been carefully considered and identified by

both the Federal CIO Council's Workforce and Human Capital for IT Committee and OPM.

In 1997, the CIO Council developed the Clinger-Cohen core competencies to serve as a baseline for use by Government agencies in complying with section 5125(c)(3) of the "Clinger-Cohen Act," (the Information Technology Management Reform Act of 1996, Division E of Public Law 104-106) which requires agencies to establish their IT knowledge and skill requirements and assess the degree to which existing staff meet those requirements. The Federal CIO Council continues to focus on the Clinger-Cohen core competencies when determining the needs of the Federal IT workforce. These competencies are intended to serve as the foundation for the Council and agencies to develop IT courses and curricula. The Clinger-Cohen core competencies are:

- Policy and Organizational
- Leadership/Managerial
- Process/Change Management
- Information Resources Strategy and Planning
- Performance Assessment: Models and Methods
- Project/Program Management
- Capital Planning and Investment Assessment
- Acquisition
- E-Government/Electronic Business/Electronic Commerce
- IT Security/Information Assurance
- Technical
- Desktop Technology Tools

Due to the changing nature of the IT field and the increased Government emphasis on management of IT resources, the CIO Council conducts a biennial update of the Clinger-Cohen competencies and associated learning objectives to ensure they remain a living framework. For instance, in a June 2003 white paper to the Federal CIO Council (Appendix A[1]), the Council's Workforce and Human Capital for IT Committee identified enterprise architecture as a newly required Federal IT competency. This competency captures the role that IT architects have assumed in driving agency and Federal-wide interoperability. Additionally, two of the Clinger-Cohen core competencies identified above, the desktop technology tools and technical competencies, are being combined.

In addition, in 2000, OPM conducted a study of the Federal IT workforce. Through this study, OPM identified IT competencies for the Information Technology Management, GS-2210, occupational series and parenthetical specialty titles.

These two sources of competency information represent the critical competencies for the Federal IT workforce and are the evaluative basis for this report in determining the adequacy of the existing IT programs to address these competencies. To ensure the maximum benefit of both the Clinger-Cohen and OPM IT competencies, OPM has

[1]http://www.cio.gov/documents/FINAL_White_Paper_on_EA_v62.doc

linked, or crosswalked, the Clinger-Cohen core competencies to the associated OPM IT competencies. The complete crosswalk between the Clinger-Cohen core competencies and OPM's IT competencies can be found in Appendix B.

The CIO Council's Workforce and Human Capital for IT Committee and OPM have established an ongoing working relationship. Through joint initiatives or in supporting roles, each is focused on helping agencies ensure they have a high quality IT workforce with the required competencies. Some of these joint efforts include: establishing the new Information Technology Management, GS-2210, occupational series; developing competencies associated with the new GS-2210 series and parenthetical specialty titles; conducting the first virtual IT job fair; developing the IT workforce roadmap; developing guidance on project manager positions; and completing a competency assessment survey of the Federal IT workforce. This partnership between the CIO Council and OPM has proved to be invaluable in successfully completing these endeavors, and will continue to be a source of mutual benefit in the future.

As the Federal CIO Council updates the Clinger-Cohen core competencies, as it is doing currently with the enterprise architecture competency, OPM will work with the CIO Council on an ongoing basis to maintain the linkage between the Clinger-Cohen and OPM IT competencies.

Assessing the Competency Needs of the Federal IT Workforce

To assist agencies in determining their competency needs, the CIO Council's Workforce and Human Capital for IT Committee conducted a competency assessment survey in September 2003 of the Federal IT workforce as required by the Clinger-Cohen Act. The survey data provides a point-in-time self-assessment of IT employee skills, certifications, and competencies, and reflects the amount of time IT employees spend in particular specialized job activity areas. When assessing the competency needs of the Federal IT workforce, it is important to understand that, ultimately, agency CIOs are responsible for determining individual agency competency needs. This assessment survey was designed to help agencies determine areas of needed competency development and to initiate the first stages of strategic workforce planning. Training is one option available to agencies to meet their goals. Outsourcing can also be used to acquire required competencies.

Agencies were provided with their individual survey results in late 2003, and the CIO Council in coordination with the Division for Strategic Human Resources Policy, OPM, recently issued the final results of the 2003 survey in June 2004. It is available to the public on the CIO Council web site. In the 2004 CCA survey, agencies will be conducting analyses of their workforces to determine current and future competency needs, comparing their survey results against these needs. These analyses will enable agencies to prepare action plans to address competency gaps. OPM's human capital officers will be providing ongoing assistance to agencies in addressing competency gaps and the adequacy of their IT training programs through evaluation against the Human Capital Assessment and Accountability Framework.

The competency assessment survey is the first Governmentwide survey of the IT workforce to establish a competency baseline. Annual use of the competency assessment survey will provide data to Federal agencies and the Federal CIO Council for ongoing analyses of IT workforce needs. The annual survey results and agencies' analyses of their IT workforce needs will also inform OPM in its continuing role of identifying when Governmentwide IT and information resource management (IRM) training does not satisfy the need of the IT workforce. The partnership between OPM, Federal agencies, and the Federal CIO Council will be invaluable in this ongoing process.

GOVERNMENTWIDE IT TRAINING PROGRAMS

This report addresses existing IT training programs available to Federal employees on a Governmentwide basis as required by the E-Government Act of 2002. In consultation with the Federal CIO Council and GSA, we have identified five IT training programs that fall within the scope of this report. These programs are the CIO University, the Strategic and Tactical Advocates for Results (STAR) Program, the Information Resources Management (IRM) College, the Graduate School, USDA, and the Federal Executive Institute (FEI) and Management Development Centers (MDCs). The training programs addressed in this report are those that address the core IT competencies required by the Clinger-Cohen Act. Finally, this report will address the IT Workforce Development Roadmap in its role as a performance support tool within the Gov Online Learning Center.

Two of these programs, the CIO University and the STAR Program, were designed by the Federal CIO Council and GSA specifically to address core competencies needed by the Federal IT workforce. Although the IT training programs offered at the Department of Defense's (DoD) IRM College are offered on a "space available" basis to non-DoD Federal employees, the IRM College does allow Federal agencies to develop Memorandums of Agreement with the college to obtain a specified number of seats on a fiscal year basis. In addition, the IRM College's IT programs are focused on the Clinger-Cohen core competencies, and therefore fall within the scope of this report. The Graduate School, USDA, has worked with the Federal CIO Council to ensure their IT curriculum meets the requirements of the Clinger-Cohen core competencies. The FEI and MDCs are dedicated to developing career leaders for the Federal Government and use the Clinger-Cohen core competencies in developing IT training courses.

The CIO University

Program Description

The CIO University, administered by GSA, is a consortium of universities that offer graduate level programs that directly address the Clinger-Cohen core competencies at the executive level. Seven universities are currently participating: Carnegie Mellon University, George Mason University, George Washington University, LaSalle University, Loyola University in Chicago,

Syracuse University, and the University of Maryland University College. Sample course offerings are available in Appendix C[2].

GSA and the CIO Council have asked these selected graduate institutions to tailor their respective academic strengths to meet the specific requirements of the Federal IT sector and its leaders. This is a unique partnership without precedent. This is the first time the Government has directly translated its requirements for its senior IT corps into a map for universities to use to develop a special curriculum.

The process by which this special curriculum was developed involved senior executives, industry representatives, and academic partners. Upon reviewing the work done by the CIO Council to identify core competencies that met the requirements of the Clinger-Cohen law, GSA and the CIO Council concluded that universities would need more specific guidance to guarantee the full intent of the law would be met. To do that, it was necessary to add specificity to the curriculum. Focus groups consisting of representatives from academia, industry, and senior executives from Government were used to review and provide input on each of the major content areas. Program objectives reflecting the group consensus were developed based on adult learning theory and behavioral learning.

The CIO University learning objectives are:

- Understanding the multi-faceted role of the CIO;
- Developing leadership and managerial abilities;
- Understanding and applying the principles of process/change management;
- Understanding information resources strategy and planning;
- Understanding performance assessment: models and methods;
- Understanding project and program management and their differences;
- Understanding capital planning and investment assessment;
- Understanding the dimensions of acquisition;
- Understanding e-Government, electronic business, electronic commerce; and
- Understanding and applying IT security and information assurance.

The seven universities offer three types of programs:

- Integrated program -- covers the full set of Clinger-Cohen core competencies,
- Modular program -- addresses some of the Clinger-Cohen core competencies, and

[2] http://www.gsa.gov/Portal/gsa/ep/contentView.do?programId=9980&channelId=-13451&ooid=12938&contentId=8825&pageTypeId=8199&contentType=GSA_BASIC&programPage=%2Fep%2Fprogram%2FgsaBasic.jsp&P=MEP

- One-week survey course -- permits individuals to take select modules for specific areas in which they need remediation or update.

Participants include high achieving professional employees from Federal, State, and Local Government, industry, and academia who occupy mid-level through senior executive positions. Employees of comparable rank in private industry can also participate. All participants must be selected by a university based on the university's admissions standards for executive development programs. Graduate degrees, graduate credits, continuing education units, and a CIO University Certificate may be granted upon completion. Since its inception in 1999, more than 450 students have participated in this program.

While 42 percent of graduates have come from the public sector, the remainder has come from the private sector. This is particularly important for the IT industry where a symbiotic relationship exists between the public and private sectors. Government is well served by enhancing the skills of IT executives in both sectors so that they can work together more efficiently. Furthermore, a cadre of private sector professionals trained in Government-oriented IT competencies provides a potential recruiting pool for future Federal hiring initiatives.

Selected CIO University Certificate recipients were contacted for the CIO Council's Workforce and Human Capital for IT Committee's Update 2002 on Federal IT Initiatives.[3] Although the sample was limited, all ten respondents said they were better able to perform their current jobs and better prepared to take on additional responsibilities after completion of the program. At the end of 2002, six out of ten had been given additional responsibilities since receiving their certificates. Half of the respondents said their CIO University education had a moderate impact on their ability to influence their organization's products, processes, and/or services. The other half was split between having a significant influence or none at all. Notably, the program does appear to be successful in teaching to the Clinger-Cohen core competencies. On average, the recipients felt their CIO University education had improved their knowledge and/or skills in 7 of the 12 competency areas.

The CIO University's capability to adapt to new demands of emerging technology and technological trends is accomplished through its partnerships. Every two years, experts from Government, industry, and academia collaborate to translate emerging technology trends into learning objectives that CIO University graduates must achieve. These objectives are then incorporated into each university's coursework.

Costs

Tuition: The cost of tuition varies by university and is paid by either the organization or the student or both. A sample list of tuition costs by university is

[3]http://www.cio.gov/documents/Update2002_workforceit.pdf

provided in Appendix C. Operational costs: GSA spends approximately $22,000 per year to administer this program.

Strategic and Tactical Advocates for Results (STAR) Program

Program Description

The STAR Program, also administered by GSA, is an interdisciplinary course of study that covers IT and project management leadership. The STAR Program is a seven day residential course, sponsored by the CIO Council and GSA. The STAR Program promotes internal agency IT efficiency and effectiveness. The course offerings available are shown in Appendix D[4]. Most attendees are at grades GS-14 through SES or a military equivalent. Due to the leadership responsibility of IT employees in the field, the STAR Program also accepts a small number of field employees in grade GS-13 and military equivalent positions. The STAR Program includes the following modules:

- Leadership,
- Security and Survivability,
- Program and Project Management,
- Technology and e-Government,
- Legislative Process, and
- Capital Planning Process.

The Capital Planning Process module provides the latest information on preparing the A-11 Circular submission and Exhibit 300, and emphasizes Federal IT initiatives such as the Federal Enterprise Architecture, e-Government, and the President's Management Agenda.

Since its inception in December 1999, 220 Federal employees have graduated from the STAR Program. Incoming participants are required to complete pre-work assignments before beginning the program. The purpose of the pre-work assignment is to assist the STAR Program's educational partners in delivering content specifically tailored to address the development needs of senior Federal IT leaders. The program is offered at least once a year in the Washington, DC region and at least once a year in the western United States with approximately 25 Federal employees per class. The STAR program's learning objectives are:

- Developing strategic management skills,
- Developing strategic planning skills,
- Developing business planning skills,
- Understanding technical infrastructure,

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[4] http://www.gsa.gov/Portal/gsa/ep/contentView.do?programId=9983&channelId=-13452&ooid=8808&contentId=8805&pageTypeId=8199&contentType=GSA_BASIC&programPage=%2Fep%2Fprogram%2FgsaBasic.jsp&P=MEP

- Understanding management structures,
- Understanding policies and processes,
- Developing program and project management skills,
- Developing leadership skills,
- Understanding organizational culture,
- Developing insight on outsourcing,
- Understanding organizational oversight functions, and
- Understanding technology trends.

The STAR program measures its success in two ways. First, after each class the participants are asked to evaluate course content, delivery, and accomplishment of learning objectives. Second, the sponsoring organization and the CIO Council's Workforce and Human Capital for IT Workforce Committee evaluate the STAR Program for appropriateness and effectiveness in addressing some or all of the Clinger-Cohen core competencies.

As part of the CIO Council's Workforce and Human Capital for IT Committee's Update 2002[5], selected STAR Program participants provided general information on their professional backgrounds and objectives for taking the course. Of the 30 respondents, one third had a predominantly technical background while two thirds indicated having a combination of skills. Most frequently this was a combination of technical and business/management skills, but a few participants had financial or acquisition backgrounds.

All 30 STAR respondents indicated that they were better able to perform their current jobs because they had taken the STAR course. In addition, fully 90 percent believed they were better prepared to take on increased responsibilities and 77 percent said they had already been given increased responsibilities since taking the STAR course. This last percentage is particularly impressive given that nearly two-thirds of the respondents took the class in 2002. When asked to what extent their attendance at STAR had helped them influence their organization's products, processes, and/or services, 60 percent of the respondents indicated the course had a moderate impact with the remaining 40 percent evenly split between a significant impact and no impact at all.

More importantly, participants evaluated the impact of the STAR Program in terms of the relevancy of its course curriculum to participants' current jobs. One third of the respondents said developing their leadership competency was their primary objective for taking the course. The remaining respondents were about evenly split between developing project management skills, career advancement, or some combination of the three as their principal objective for participating in the program.

[5] http://www.cio.gov/documents/Update2002_workforceit.pdf

The STAR program has measures in place to ensure its adaptability to current and new demands based on emerging technology and technological trends. Based on professional "best practices," as collected and reviewed by GSA and the CIO Council, subject modules are updated and changed when appropriate. Additionally, the Capital Planning Process Module is modified and updated for each class offering to reflect policy changes.

Costs

Tuition: $2,950 plus per diem expenses. Operational costs: GSA spends approximately $55,000 per year to administer this program.

Department of Defense (DoD) Information Resources Management (IRM) College

Program Description

DoD offers managerial level IT training primarily through the National Defense University's (NDU) IRM College. The IRM College is responsible for implementing the senior level educational requirement of the Clinger-Cohen Act under the policy guidance of the DoD CIO. To be eligible to attend, Federal employees must be at least at the GS/GM-13 grade level. Additionally, all potential students must possess a Bachelor's degree from a regionally accredited institution. Waiver requests may be submitted for one grade (GS-12) and/or degree.

Students represent multiple communities, including functional managers planning to use the information within their organizations, information managers performing systems integration functions, and military officers planning information operations or protecting elements of DoD's information infrastructure. The IRM College accepts military and civilian students from DoD as well as senior level officials from other Government agencies and departments, foreign military officers, and private sector students from information systems companies doing business with the Government.

All instruction is conducted by four academic departments:

The Chief Information Officer Department focuses on the policy and planning processes, leadership and management competencies, and perspectives for information resources management for leadership positions in the offices of CIOs across DoD and the Federal Government.

The E-Government and Technology Department is responsible for courses that explore the latest advances in computer hardware and software, simulation, expert systems, and communications technology through an examination of capabilities, uses, and related issues.

The Information Operations and Assurance Department focuses on information operations, assurance, and security in planning and executing national strategy and military strategy.

The Systems Acquisition Department is responsible for courses focused on the policies, principles, and issues surrounding DoD and interagency information technology program management and acquisition, enterprise architecture, and data management.

Through these departments the IRM College offers both residential and distributed learning courses and programs that address the Clinger-Cohen core competencies for the Federal IT workforce. These programs are described in detail below.

The Chief Information Officer Certificate Program

The CIO Certificate Program, sponsored by the DoD CIO, is a source of graduate education for developing IT personnel.

The CIO Certificate Program is organized around 11 subject areas directly related to the Clinger-Cohen core competencies identified by the Federal CIO Council. Each subject area is articulated as one or more courses in a particular subject or topic. Some courses are designed to be primary offerings, while others are considered enrichment courses in student programs.

The E-Government Leadership Certificate Program

The E-Government Leadership Certificate Program is designed to facilitate the development of new knowledge, skills, and abilities needed by leaders in the e-Government arena. The program is designed to build capacity for leaders to be systematic thinkers who thrive on partnerships and networks in complex environments, and who have energy to collaborate, integrate, and redesign processes and policies. The program promotes participants' broad vision and commitment to performance measurement and collaboration with their colleagues in innovative and bold ventures across department, agency, and sector boundaries. The E-Government Leadership Certificate Program seeks to develop cross-boundary leadership to achieve the vision and goals of transformation in e-Government for citizen interaction and customer satisfaction. In addition, it fulfills the requirements of the Clinger-Cohen core competencies listed under "e-Government."

The Information Assurance Certificate Program

The Information Assurance Certificate Program consists of a series of courses that emphasize security concerns and approaches fundamental to protecting the information infrastructure. The Committee on National Security Systems has

certified that the curriculum is compliant with the NSTISSI No. 4011 Standard for Information Systems Security Professionals. This program also fulfills the requirements of the Clinger-Cohen core competencies listed under "IT Security/Information Assurance."

The Advanced Management Program

The 14 week graduate level Advanced Management Program (AMP) provides functional and technical information resource managers with an integrated understanding of policies and imperatives, such as the Clinger-Cohen Act, and their impact on the organization. The program prepares graduates to form effective managerial partnerships with stakeholders to ensure effective allocation and application of information resources to mission requirements in compliance with policy, regulatory, and ethical standards.

The AMP curriculum provides comprehensive coverage of the core competencies identified by the Federal CIO Council as needed to become a successful Federal CIO or other senior IRM official. These competency areas include:

- Application of governing IRM policies;
- Laws and reporting requirements;
- Information resources strategic planning that links the agency's vision, mission, and programs with performance standards and budgets;
- Information planning strategies and modeling;
- Capital planning and selection and evaluation of IT investments using established criteria;
- Benchmarking and process analysis to ensure performance and results-based management;
- Assessing technology trends and identifying organizational technology needs for implementing e-Government solutions;
- Applying standards and guidelines for designing architectures to align technology with organizational structure, processes, and human resources;
- Acquiring technologies using acquisition reform to support efficient and effective Government operations; and
- Leading the organization through changes necessitated by emerging and changing technology.

Students completing the AMP are awarded the CIO Certificate.

Graduates of IRM College programs may transfer up to15 graduate level credit hours, toward selected Master's or Doctoral degree programs at partner institutions (see Appendix E[6]).

[6] http://www.ndu.edu/irmc/partnerships/index.html

Enrollment

For fiscal year 2003, the IRM College enrolled approximately 3,200 students. Of that number, approximately 24 percent were from non-DoD Federal agencies. The Federal Aviation Administration and the Environmental Protection Agency provided the bulk of those students, enrolling approximately 200-250 students each. Other Federal agencies that sent students to the IRM College include the Department of Homeland Security, the Bureau of Land Management, and the Internal Revenue Service. To date, the CIO Certificate Program has 999 graduates and the IA Program has 424. The newer eGov Leadership Program has five.

Costs

Tuition: For FY04, federal agency students paid $995 per each intensive course within the CIO Certificate Program, the E-Government Leadership Certificate program, and the Information Assurance Certificate Program. Tuition for the Advanced Management Program is $9,000.00. Agencies that contract with the college for 25 seats or more receive a discounted tuition rate. DoD students pay no tuition fee. Operational costs for the college were not available.

The Graduate School, USDA

Program Description

The Graduate School offers career-related and continuing education courses to Federal, State, and local government employees throughout the country. The Graduate School annually enrolls 200,000 students in nearly 1,000 courses. Courses are available in a variety of convenient formats to fit any schedule:

- Daytime, evening, and weekend classes;
- Correspondence, self-study, and online distance courses;
- Instructor-assisted distance courses; and
- Customized training programs using various learning media.

Established in 1921 by the Secretary of Agriculture, the Graduate School's mission is to improve the performance of Government and to provide opportunities for individual lifelong learning through education, training, and related services.

The Graduate School does not grant degrees and has never sought that authority. The school's focus is on continuing education and training for working adults. Although associated with the U.S. Department of Agriculture, the Graduate School is self-sustaining and receives no Federal funds. Its only source of income is tuition and fees. The Graduate School offers a number of courses and programs

designed to focus on the Clinger-Cohen core competencies. A complete list can be found at Appendix F. The Graduate School, USDA, is governed by a General Administration Board appointed by the Secretary of Agriculture. Board members are drawn from senior positions in Government, business, and academia.

The Graduate School, USDA, has an ongoing relationship with the Federal CIO Council. They present new program proposals to the Council and hold meetings and discussions with the various members to review their needs and requirements. The Graduate School's IT Advisory Committee draws its members from Federal agencies, industry leaders, and academia. Members meet and discuss changing IT trends and how those trends affect the school's IT curriculum offerings.

Feedback is also solicited from Federal agency clients regarding their IT training needs. Student evaluations are regularly reviewed, and the feedback received is used both to identify needed updates to current course materials and to target new training needs. The faculty consists of practicing professionals who are attuned to new and emerging technologies. Staff members belong to a number of professional associations and attend training events and conferences to review current training initiatives.

In FY03, 6,356 students attended the Graduate School's IT courses. The top ten Federal agencies sending students were:

- Department of Agriculture;
- Department of Army;
- Department of Commerce;
- Defense Information Systems Agency;
- Environmental Protection Agency;
- Department of Health and Human Services;
- Department of Housing and Urban Development;
- Department of Transportation;
- Department of Treasury; and
- Department of Veterans Affairs.

Costs

Tuition costs at the Graduate School vary. Prices can range from $275 for the self-paced Introduction to Information Systems Technology Course to $9,500 for a nine week Webmaster Certification Program.

Federal Executive Institute (FEI) and Management Development Centers (MDCs)

Program Description

OPM's Federal Executive Institute and Management Development Centers develop career leaders for the Federal Government. The three centers, in

Charlottesville, Virginia; Shepherdstown, West Virginia; and Denver, Colorado, all offer residential learning environments and are staffed with program directors, seminar leaders, and facilitators. Specific objectives of the FEI and MDCs are to:

- Create, share, and apply knowledge and skills to address the challenges faced by public sector organizations;
- Develop the values and competencies that are the foundation of public service, transcending individual professions and missions; and
- Offer state-of-the-art learning experiences in world-class learning environments.

The attendees of these programs are high performing supervisors, managers, and executives who attend from a few days to four weeks, depending on the course, to enhance their leadership and management skills. They may do so at any stage of their careers from first line supervisor through the Senior Executive Service. While the FEI and MDCs are not specifically tailored to IT training, two courses, Managing Complex Projects and Maximizing IT Investments, deserve mention under IT Training. (See Appendix G for a sample of other courses that address the leadership and managerial aspects of the Clinger-Cohen core competencies.)

Managing Complex Projects (*Insuring the Success of Information Technology and Other Major Projects)*

"Managing Complex Projects" is designed to meet the needs of project managers charged with major project implementation such as information technology. It provides participants with key project management concepts, tools, and techniques that are used to manage complex projects successfully. The course focuses on the purpose of the project and its relationship to the organization's strategic direction as well as techniques for planning, organizing, and implementing significant projects. Project managers learn skills required to effectively lead project teams. Major topics include project manager responsibilities, measuring project success, project planning, work breakdown structure (organizing project elements into outcomes), cost control, financial impact, and risk analysis. The learning objectives of this course are:

- Understand the classic project management framework and basic terminology;
- Track and analyze project progress;
- Plan projects in alignment with the strategic direction of the organization;
- Develop an appropriate measure of success for a project;
- Perform achievement-based project planning to support earned value analysis;
- Explore what works and what gets in the way of good project team leadership;
- Apply project management processes, tools, and techniques to plan and implement projects;

- Communicate project progress to meet the needs of individuals and groups;
- Schedule work and allocate resources in a project plan;
- Analyze proposed project changes and effectively respond;
- Gain familiarity with Earned Value Management Systems, including an overview of the standards established by the American Standards Institute and the Electronic Industries Alliance;
- Coherently present a project plan and provide constructive feedback on the presentations of project plans; and
- Apply project management quantitative tools and techniques in cost/benefit and risk analysis.

This course was offered for the first time in December of 2003. To date, 20 Federal employees between grades GS-12 and 15 have enrolled. The course does not attempt to address current and emerging technological trends. Rather, it is designed to help IT and other project managers charged with implementing complex projects using project management tools that will enable them to manage the project successfully.

Cost: Tuition $2,900.

Maximizing IT Investments *(People, Processes, and Technology)*

This seminar assists Federal managers involved with the acquisition and management of IT resources. Participants learn how to develop appropriate criteria for assessing and determining their organization's IT requirements.

This seminar is of particular value to those individuals who have responsibility for implementing selected provisions of the Clinger-Cohen Act. Attendees learn about Federal IT legislation and how it affects their agency or work unit. They develop an in-depth understanding of how to effectively implement IT guidance. Participants examine the methods for conducting a management-level system requirements analysis for their organizations, and learn a business case approach for justifying IT investments and analyzing return on investment. The learning objectives of this course are to:

- Learn the key guidance for making IT investments;
- Understand the requirements of the Clinger-Cohen Act;
- Develop and use the business case to justify IT investments;
- Understand the relationships among relevant Federal IT legislation;
- Learn the e-Government requirements of the President's Management Agenda;
- Learn about the best IT practices; and
- Learn about information security and how to safeguard important information.

This seminar does not attempt to address current and emerging technology trends. Its focus is specifically tailored to policies associated with the Office of Management and Budget, development of the business case, and project management. In calendar year 2002, approximately 120 Federal employees in grades GS-12 through 15 participated in this program.

Cost: Tuition $2,600.

Gov Online Learning Center (GoLearn)

Program Description

GoLearn.gov, a Governmentwide e-Training portal, is a result of the President's Management Agenda e-Gov Initiatives, specifically the e-Training Initiative, and is managed and maintained by the e-Training Initiative Team. GoLearn.gov is a virtual campus that houses free and for-fee e-Training courses and performance support tools for Federal agencies and employees. Among the many offerings, GoLearn.gov provides agencies with a consolidated approach to training and career development through web-based career management tools – currently through the IT Workforce Development Roadmap. The tools in GoLearn.gov will allow users to review competencies that OPM has identified for various career paths, assess their own competencies relative to these career paths, and identify appropriate training and development opportunities. As a result, agencies are able to generate career development plans that map to related training that is available in the Gov Online Learning Center and other training and development opportunities.

GoLearn.gov, which was launched in July 2002, is available across Government to all Federal employees regardless of grade. E-Training courses are available on a variety of subjects, such as legislatively mandated and agency required topics (e.g., Computer Security Awareness and Prevention of Sexual Harassment), Governmentwide, high-interest training topics (e.g., end-user computer training, supervisory and managerial training, homeland security), and IT courses. (See Appendix H for a sample of courses taken by individuals in the GS-2210, Information Technology Management occupational series.)

Costs

The e-Training Initiative is currently funded through a combination of appropriations and fees-for-service. The annual appropriated budget for the e-Training Initiative in FY03 and 04 was $2.5 million. Approximately $13 million was received in net revenues from fee-for-service in FY03 and approximately $32 million is anticipated for FY04.

In the fee-for-service arena, e-Training Initiative service provider uses a total cost of ownership model, and plans to be completely self-sustaining by the beginning

of FY06. In addition, a Management Services Provider business model is used, which means that outsourcing is used whenever feasible.

IT Workforce Development Roadmap

On September 17, 2003, the IT Workforce Development Roadmap was launched on the GoLearn.gov site. The CIO Council's Workforce and Human Capital for IT Committee developed this web-based tool, which provides a strategic and expeditious way for agencies to develop their IT workforce. Over the past year the e-Training Initiative Team has collaborated with the CIO Council to provide this tool as a performance support tool hosted on the GoLearn.gov site and available Governmentwide. The IT Workforce Development Roadmap provides agencies and their employees in the IT profession with the ability to:

- Conduct competency assessments;
- Conduct skill gap analyses;
- Create individual development plans (IDPs);
- Create career progression plans;
- Identify and launch e-Training courses residing on GoLearn.gov to close gaps; and
- Map to other training and development opportunities.

Competency assessments and plans are organized around the ten parenthetical specialty titles in the GS-2210, Information Technology Management occupational series, which can be found in OPM's *Job Family Position Classification Standard for Administrative Work in the Information Technology Group, GS-2200*. The ten specialties within the GS-2210 occupational series are:

- Applications Software,
- Customer Support,
- Data Management,
- Internet,
- Network Services,
- Operating Systems,
- Policy and Planning,
- Security,
- Systems Administration, and
- Systems Analysis.

Each parenthetical specialty title is divided into four performance levels: Entry, Intermediate, Full Performance, and Senior Expert. Specific competency requirements are outlined for each performance level. Each competency in a performance level has a recommended proficiency level, ranging from basic to expert. The Federal CIO Council's Workforce and Human Capital for IT Committee worked with subject matter experts (SMEs) to identify the proficiency

levels for the competencies. SMEs included public and private sector IT professionals.

To date, over 500 IT employees from approximately 27 agencies have conducted skill gap analyses and used e-Learning resources available on the Gov Online Learning Center. Registered users most frequently identified Project Management as a competency gap. The most common e-Learning topic requested by registered users was IT Security. Approximately 425 of the IT employees using the Roadmap have created individual development plans (IDPs). The average pre-test score for IT courses taken on the GoLearn.gov site is 87 percent correct and the average post-test score is 98 percent correct.

Continuing collaboration between OPM, the e-Training Initiative Team, the Federal CIO Council, and Federal agencies will focus the strategic direction for the Roadmap on current and emerging IT workforce development needs.

Relationships between the CIO University; the STAR Program; the IRM College; the Graduate School, USDA; the FEI & MDCs; and GoLearn and the IT Workforce Development Roadmap

The CIO University and STAR Program address IT policy and managerial competencies drawn from the Clinger-Cohen core competencies. CIO University is a graduate level executive program addressing a broad spectrum of leadership competencies, which requires months of study and typically results in college credit. In contrast, STAR is an intensive infusion program focused on key leadership areas, based on a six day resident model. These programs provide unique Government perspectives and knowledge not commonly available via the private sector.

The IRM College programs center on the Clinger-Cohen core competencies required for DoD and Federal IRM leadership. The graduate level programs address unique government responsibilities related to the Act and serve as a building block for partnership agreements with other universities, many of which are participating in the CIO University consortium. These agreements allow IRM College graduates to transfer up to 15 hours credit toward selected master's degrees and doctorates. The IRM College works closely with partnering universities to ensure its curriculum is complementary to the degree programs versus repetitive.

The Graduate School, USDA, provides training in all Clinger-Cohen core competency areas, including technical competencies. The Graduate School works closely with the Federal CIO Council to ensure they are meeting the needs of the Federal IT community in addressing these competencies.

The FEI and MDCs, while designed specifically to develop career leaders, offer numerous courses that address different aspects of the Clinger-Cohen core competencies.

The IT Workforce Development Roadmap was designed by the Federal CIO Council to be the cornerstone of a Federal IT career development program through its capability as a centralized tool for IT workforce assessment and development. It is offered Governmentwide on the GoLearn.gov website.

All of these programs are tied to the Clinger-Cohen core competencies for the Federal IT workforce, as defined and updated by the Federal CIO Council. However, these programs have not been integrated into a single Governmentwide IT training framework.

Recommendation

OPM believes that the programs addressed in this report can be the foundation of a Governmentwide IT training framework. All programs reviewed in this report are driven by the Clinger-Cohen core competencies as outlined by the Federal CIO Council, address the different levels of IT development, and have built-in program assessment and update capabilities. Based on an adequacy assessment of existing IT programs determined by the programs' capability to address Clinger-Cohen competencies, there are no current recommendations for improving these existing IT training programs. However, we recommend that a Governmentwide IT training framework be established using the IT Workforce Development Roadmap to link the programs discussed in this report, as well as the IT Exchange Program.

IT Workforce Development Roadmap

The IT Workforce Development Roadmap is driven by OPM's IT competencies which, as discussed, are crosswalked with the Clinger-Cohen core competencies. Additionally, OPM agrees with the Federal CIO Council in identifying the Roadmap as the cornerstone of IT career development. Currently, the Roadmap only links to available opportunities within GoLearn.gov. We recommend that the IT Workforce Development Roadmap be used as the foundation for linking all the programs discussed in this report into a Governmentwide IT training framework. Figure 1.1 displays what a Federal IT training framework would look like with the Roadmap as the cornerstone.

IT Exchange Program (5 U.S.C. chapter 37)

The IT Exchange Program (ITEP) will allow promising individuals from the Federal Government and the private sector to share rather than compete for critical IT expertise. Participating Federal IT workers will be exposed to private industry's best practices, while private sector employees will gain a greater understanding and appreciation of the challenges Federal agencies face in meeting the growing demand for Government IT services.

We recommend that every agency include the ITEP, in addition to the programs discussed in this report, as an integral component of their human capital plans to build IT capacity and to fill competency gaps. Each agency's assessment of its current workforce will identify competency imbalances, as well as areas where the IT workforce may lack the expertise necessary to address agency priorities. Human capital plans should identify

competency gaps and positions where the ITEP could be used to meet agency needs, and the process for identifying candidates to participate in the exchange.

Additionally, as illustrated below, we recommend that the ITEP be included in a Governmentwide IT training framework as a developmental opportunity within the IT Workforce Development Roadmap. OPM, in consultation with the CIO Council, will administer the ITEP.

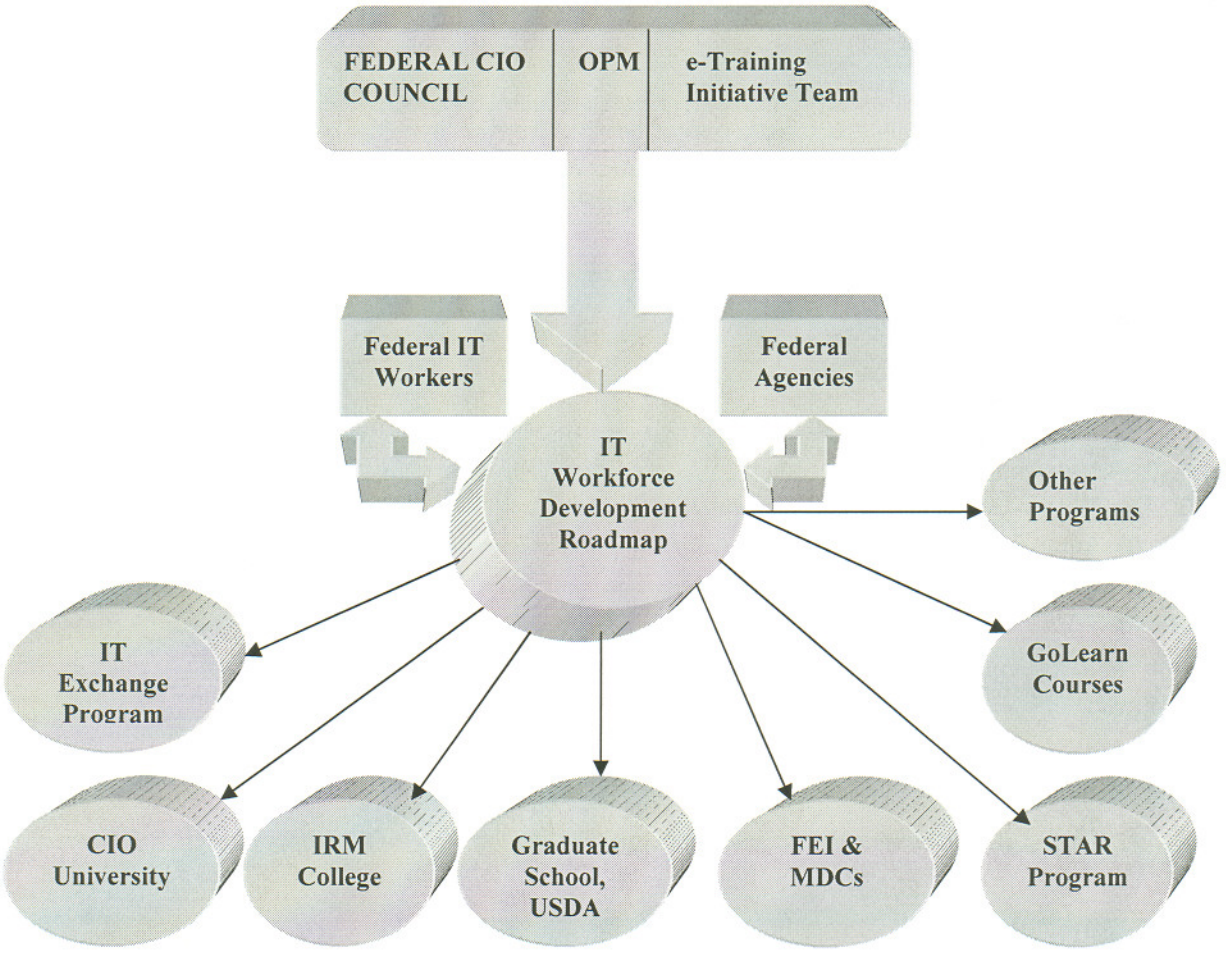

Figure 1.1 Proposed Federal IT Training Framework Plan.

The above figure illustrates the interaction among the IT Workforce Development Roadmap, Federal agencies, Federal IT workers, OPM, the e-Training Initiative Team, and the Federal CIO Council. It describes how the Roadmap could show individuals and agencies the various training and developmental opportunities that are available to address their competency needs.

In addition to the IT training programs identified in this report, the Roadmap should navigate individuals to other opportunities. These opportunities should include, but not

be limited to, shadowing programs, coaching opportunities, mentoring programs, and developmental assignments. The inclusion of these other opportunities will enhance the ability of Federal agencies and their IT workers to identify and set career goals. This framework illustrates a blended learning approach to the training and development of the Federal IT workforce. Figure 1.2 below demonstrates the roles and responsibilities related to the IT Roadmap.

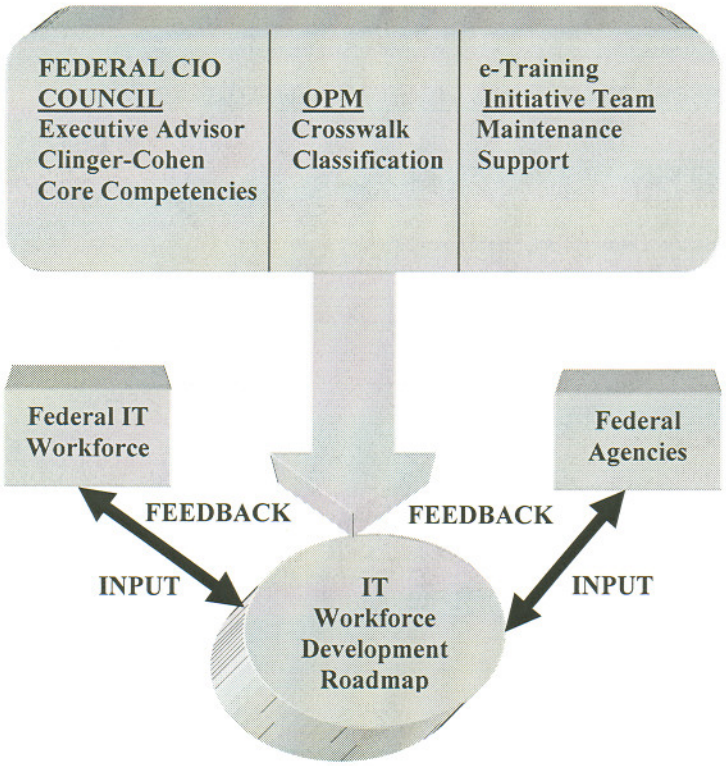

Figure 1.2. Roles and Responsibilities

This figure illustrates that a partnership between the Federal CIO Council and OPM must exist to ensure the validity of this framework. As the Clinger-Cohen core competencies are updated by the Federal CIO Council, OPM will continue to update its crosswalk of IT competencies in the IT Roadmap with the Clinger-Cohen competencies, as appropriate. OPM will also continue to ensure that job classification standards meet the needs of the Federal IT workforce. OPM, currently through the e-Training Initiative Team, will continue to maintain the Roadmap as appropriate.

The role of Federal agencies in the proposed Governmentwide IT training framework would be to work in partnership with the e-Training Initiative Team to identify agency needs in the area of available IT training. Agencies will also use the Roadmap to identify and address current and projected competency gaps. This partnership would include agencies funding their employees' participation in the Roadmap and articulating agency training requirements to the e-Training Initiative Team. Additionally agencies will be expected to encourage their IT workforces to enroll in the Roadmap, develop IDPs, conduct competency assessments, and perform gap analysis. In return, the Roadmap will

provide agencies with data to use in their workforce planning efforts. Figure 1.3 illustrates the individual IT worker's relationship with the Roadmap.

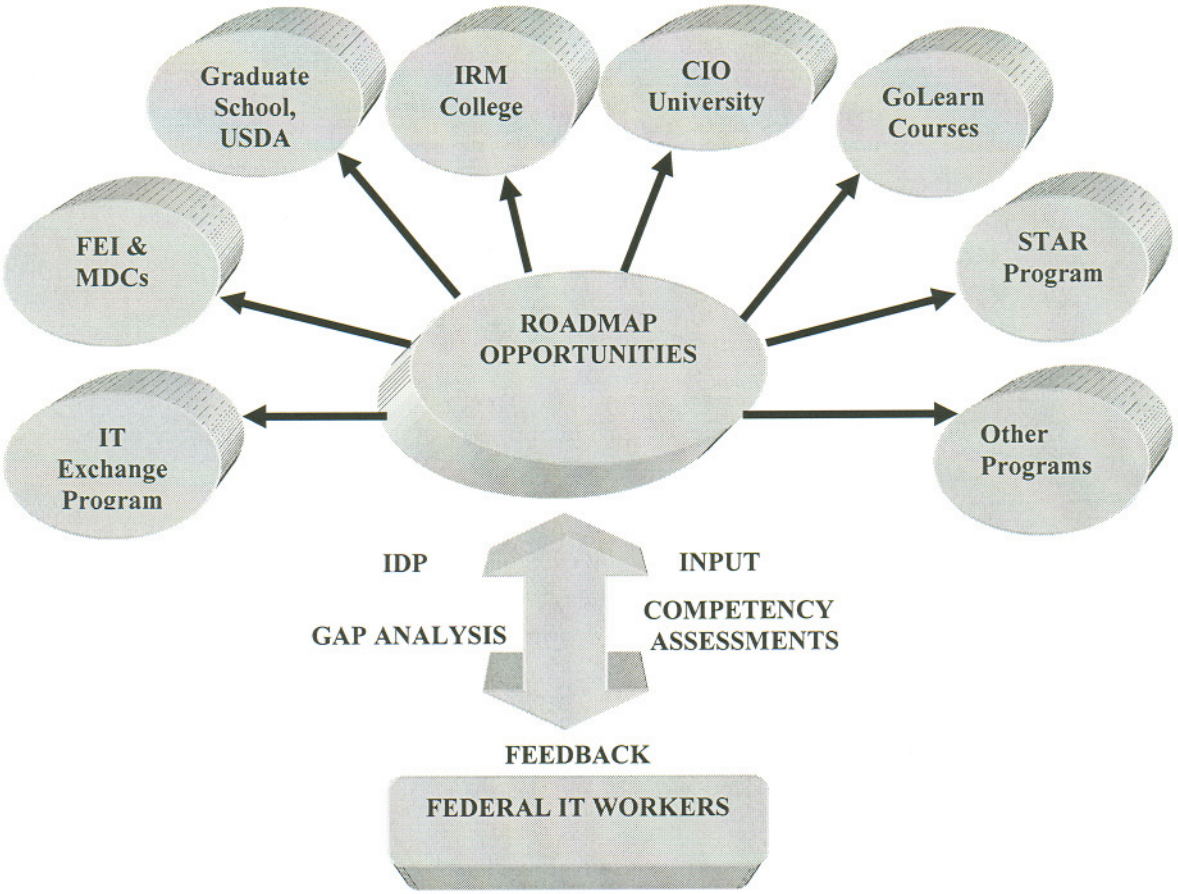

Figure 1.3. The Individual IT Worker's Relationship to the Roadmap.

For the individual Federal IT worker, the Roadmap should be just that, a map to the myriad of training and development opportunities available in the Federal Government. Federal IT workers currently have the ability to use the Roadmap to guide their personal career development and to identify training opportunities housed within the GoLearn system. This Governmentwide IT training framework will provide expanded training and development opportunities for both Federal IT workers and the agencies they serve.

Cost of Recommendation

Because the IT Workforce Development Roadmap has only been recently launched, we do not currently know what the yearly maintenance and update costs will be. The costs of GoLearn fee-for-service coursework could be comparable or less, due to economies of scale, than the amount agencies currently spend on IT training. The costs to the Federal CIO Council are dependent on availability of Council members and need to use contractors to perform the duties associated with the Council's role as Executive Advisor. There is no cost to employees and currently no cost to agencies associated with the use of

There is no cost to employees and currently no cost to agencies associated with the use of the IT Roadmap to conduct competency assessments, conduct skill gap analyses, create IDPs, create career progression plans, or identify and map to sources of training and development. However, agencies will incur costs to close competency gaps, whether through the use of fee-based GoLearn courses or other Roadmap identified sources.

SUMMARY

There are various Governmentwide IT training programs available for agencies and the Federal IT workforce to utilize in training and career development. The training programs identified in this report address, either in full or part, the Clinger-Cohen core competencies identified by the Federal CIO Council as the foundation of their curricula. In addition, the IT Workforce Development Roadmap is the right tool, at the right time, to be the cornerstone of an integrated Federal IT training framework. The Roadmap is built on the OPM IT competencies, which are aligned with the Clinger-Cohen core competencies, and also form the foundation for the GS-2210, Information Technology Management series. As more agencies utilize the Roadmap, more individual Federal IT workers will benefit from having such a tool to manage their career development. The Roadmap also builds the Federal Government's capacity to effectively manage the Federal IT workforce through a centralized capability for workforce assessment and training and development opportunities.

APPENDIX A

THE FEDERAL CIO COUNCIL'S UPDATE TO THE CLINGER-COHEN CORE COMPETENCIES

Updating the Clinger-Cohen Competencies for Enterprise Architecture

Executive Summary

The Federal Chief Information Officers (CIO) Council has been empowered to regularly update the Clinger-Cohen competencies with refreshed views of industry and federal IT practices. In recent years, the success of the Federal Enterprise Architecture Framework (FEAF) and the Federal Enterprise Architecture Program Management Office (FEAPMO) in promoting the pervasiveness of enterprise architecture initiatives clearly demonstrates that Enterprise Architecture (EA) is one of the most critical forces driving Government-wide interoperability, shaping initiatives, and fostering consolidation and reuse of business processes, systems, and technology across the federal IT landscape. The primary purpose of this document is to provide sufficient justification and detail for adding a new competency, Enterprise Architecture, to the Clinger-Cohen competencies that will reflect critical skills and definitions of the components of Enterprise Architectures, identify key working relationships, and describe how EA projects are typically structured and staffed across the Federal Government. The content of this paper also proposes competencies and associated learning objectives for EA across federal agencies in Appendix A.

A streamlined Federal Government with more federal-wide solutions and systems, and reduced IT acquisition and maintenance costs, is contingent upon a well-trained IT federal workforce capable of managing the design, integration, and fielding of IT technology. The roles played by each agency's Enterprise and Solutions Architects will be key to the successful implementation of the Federal IT and E-Gov Initiatives. Enterprise Architects design the information and technology frameworks to implement the agency's IT strategic vision and therefore must possess both the technical and managerial expertise required to achieve the target architecture. Standardization of terminology and establishment of baseline federal EA competencies will facilitate Enterprise Architecture efforts across the Federal Government.

Background

What is Enterprise Architecture?

Enterprise Architecture (EA) links the business mission, strategy, and processes of an organization to its IT strategy. It is documented using multiple architectural models or views that show how the current and future needs of an organization will be met. By focusing on strategic differentiators and working across the enterprise, there is a unique opportunity to create leverage and synergies and avoid duplication and inconsistencies across the enterprise. The key components of the EA are:

- Accurate representation of the business environment, strategy and critical success factors
- Comprehensive documentation of business units and key processes
- Views of the systems and data that support these processes
- A set of technology standards that define *what* technologies and products are approved to be used within an organization, complemented by prescriptive enterprise-wide guidelines on *how* to best apply these technology standards in creating business applications.

In essence, the EA defines the target architecture at a given point in the future that is necessary to support the business mission and strategy of an organization. The box below provides two definitions of an EA by the Federal CIO Council and the Meta Group, an IT consulting firm.

> *"Enterprise Architecture is a strategic information asset base, which defines the business mission, the information necessary to perform the mission, the technologies necessary to perform the mission, and the transitional processes for implementing new technologies in response to the changing mission needs."*
>
> **Federal CIO Council**
>
> *"Enterprise Architecture is the holistic expression of an organization's key business, information, application and technology strategies and their impact on business functions and processes. The approach looks at business processes, the structure of the organization, and what type of technology is used to conduct these business processes."*
>
> **Meta Group, Inc.**

Enterprise Architectures typically includes a baseline architecture, a target architecture, and a transition plan for moving from the baseline to the target. The target architecture components may be justified using business cases developed by the enterprise architecture team. At a minimum, EA is documented using the following architectural models:

Business architecture - addresses the business mission, strategy, line of businesses, organization structure, business process models, business functions, etc.
Information architecture (also known as data architecture) - defines what information needs to be made available to accomplish the mission, to whom, and how.
Application architecture (also known as functional architecture) - focuses on the application portfolio required to support the business mission and information needs of the organization. At the next level of detail, it addresses the common business components and business services that can be leveraged by multiple applications.
Technology architecture - defines the technology services needed to support the application portfolio of the business. It also documents the software, hardware, and network product standards.

John Zachman is the world's leading expert on Enterprise Architecture, and author of the internationally renowned *"Framework for Enterprise Architecture", w*hich has set the standard on how an organization should develop, implement, and maintain an Enterprise Architecture. Additional work by Steven Spewak and others, as well as the Federal CIO Council itself, has resulted in ever increasing maturity of enterprise architecture efforts across the commercial sector and the federal government.

EA Across the Federal Government

Executive Order 13011, *Federal Information Technology*, established the Federal Chief Information Officers (CIO) Council as the principal inter-Agency forum for improving practices in the design, modernization, use, sharing, and performance of Federal information resources. The Clinger-Cohen Act of 1996 assigned the CIOs with the responsibility to develop information technology architectures (ITAs). The Office of Management and Budget (OMB) Circular A-130, *Management of Federal Information Resources*, November 28, 2000, requires agencies to ensure consistency with Federal, agency, and bureau Enterprise Architectures and to demonstrate consistency through compliance with agency business requirements and standards.

In support of these mandates, the Federal CIO Council developed and published the Federal Enterprise Architecture Framework (FEAF) in September 1999, to promote shared development for common Federal processes, interoperability, and sharing of information among the Agencies of the Federal Government and other Governmental entities. In serving the strategic needs and direction of the Federal Government, the Federal CIO Council seeks to develop, maintain, and facilitate the implementation of the top-level Enterprise Architecture for the Federal Enterprise. The Framework consists of various approaches, models, and definitions for communicating the overall organization and relationships of architecture components required for developing and maintaining a Federal Enterprise Architecture.

In response to the Clinger-Cohen Act of 1996, and the FEAF, most federal agencies have initiated efforts to create EA awareness or to build an EA management foundation. The scope of these EA projects has ranged from functional area or sub-agency architectures (Zachman verticals) to agency-wide definitions (Zachman horizontals) that extensively leverage process and technology commonality within an agency.

In 2001, The President's E-Government Taskforce identified 24 Presidential Priority E-Gov initiatives that are potentially transformational in nature and offer the opportunity to simplify, unify and consolidate processes used by the Federal Government. These Initiatives will enable the Federal Government to better serve the public, promote interactions across governmental organizations, and perform business activities while continuously improving internal efficiency and effectiveness. The OMB's Federal Enterprise Architecture Program Management Office (FEAPMO) has continuing stewardship responsibilities for these E-Gov Initiatives, as they become the first real instantiation of the Federal Enterprise Architecture (FEA). Whereas the Federal CIO Council defined a *framework* for the FEA in 1999, the FEAPMO, with the support of the Federal CIO Council, is now in the process of developing a Federal Enterprise Architecture.

FEAPMO is developing five reference models: performance, data, services components, technical, and business. Working jointly, these models will drive standardization and cross agency collaboration opportunities. They will also provide a structured approach to analyze overlapping functions, identify similarities across agencies, and provide a means by which agencies can leverage best practices from each other – promoting reuse in the government.

The FEA is intended to provide a consistent, industry-aligned approach for defining and communicating the components needed to cost and plan E-Gov programs – both the 24 Presidential Priority E-Gov Initiatives and other IT initiatives across the Federal Government. It is based on the business requirements derived from the priority initiatives as well as system engineering design best practices. Such an approach is essential if the Federal Government is to 1) leverage information technology investments and avoid unnecessary duplication of infrastructure and major components, 2) link business processes through shared, yet sufficiently protected information systems, and 3) leverage disparate business processes, services and activities that are located outside Agency boundaries.

Enterprise Architects and Solutions Architects

At its core, Enterprise Architecture and Solutions Architecture (SA) differ primarily in business scope and the breadth of business and technical issues analyzed. While the Enterprise Architect studies and defines solutions for the entire enterprise or agency, the Solutions Architect is generally concerned

primarily with studying and defining solutions for a single system, department or solution area within an agency. Both Enterprise and Solutions Architects deal with the same fundamental business and technology issues: alignment with core agency business strategies, business process simplification and the implementation of information technology that enables the realization of key business objectives. However, the Enterprise Architect is concerned with business issues, process optimization and technology standardization at an agency level or, in the case of the FEAPMO, across the Federal Government at large. The Solutions Architect is concerned with these same issues, but on a smaller scale and within the scope of a single project or system.

Enterprise Architects and Solutions Architects most often do not operate independently, however. Enterprise Architects often help guide the implementation of EA standards in the development and deployment of targeted solutions and Solutions Architects often play key focused technical and business roles on EA projects and ongoing initiatives. Solutions Architects often seek the guidance of Enterprise Architects to help interpret EA components and Enterprise Architects may act as internal consultants to the Solutions Architecture team. This interdependence and dynamic role shifting occurs normally in the life cycle of EA and solution development.

Historically, Solutions Architects have been classified in a variety of ways in the commercial and government sectors. Most typically, a System Architect would lead the design of a system or solution. In turn, the system architect would be responsible for a group of specialized architects such as the data, software, network, security and hardware architects. Some projects created a role called Chief Solutions Architect, supported by architects classified as business, application, systems management, infrastructure, and network architects. Many other variations on architect and architecture classification and nomenclature exist to this day. Standardization of the classification of Solutions Architects across the Federal Government would reduce much of the current confusion and facilitate both enterprise architecture and solutions architecture efforts.

Organizational Relationships of a Typical Enterprise Architecture

The actual staffing and management within a public or private organization would be based on the complexity of its IT projects and the fluidity of its subject matter experts collaborating on multiple projects. It is acknowledged that there are no "hard core" standards today regarding the organization and execution of EA projects. However, a review of EA initiatives across the Federal Government and private industry will overwhelmingly support the working relationships shown below. EA projects need to leverage the best agency talent available for each role, so multiple roles can be filled by a single architect and, conversely, a single role can be performed by multiple architects.

At the Enterprise Architect level, roles and responsibilities generally remain static; however, the Solutions/Project Architects' roles change, depending on the scope and complexity of a particular project. A Chief Solutions Architect and various subordinate Solutions Architects may be called upon to provide specialized expertise for larger scaled projects. On the other hand, when implementing a small-scale solution for a particular department, Enterprise Architects may use a single Solutions Architect with specialized knowledge in the toolset to be implemented.

Although Enterprise Architects guide the overall architecture and Solutions/Project Architects implement the solutions, both groups work collaboratively to share direction, knowledge, and resources.

Each of the major roles and responsibilities is described below:

Chief Enterprise Architect. The *Chief Enterprise Architect* has overall responsibility for all of the enterprise architectures and their ability to meet agency needs. This is an architectural design role, rather than a management responsibility. Key responsibilities include:

- Define an enterprise-wide documentation standard for architectures.
- Define an enterprise-wide set of policies and principles for architectures.
- Keeps appraised of emerging technologies to evolve enterprise IT architecture with more efficient and effective standards.

Enterprise Architect. The *Enterprise Architect* is responsible for the definition and use of one of the enterprise architectures (Business, Information, Applications, or Technology). The Enterprise Architect must have a broad view of the entire organization/agency. This person is a leader in business strategy, vision, and overall information technology systems and architecture. Key responsibilities include:

- Develop and maintain the architecture, working with the *other enterprise architects* to ensure consistency and completeness, and seeking approval for changes from the *Chief Enterprise Architect*, if not the same person/office.
- Document the enterprise architecture using approved documentation standards.
- Define and maintain policies and principles relevant to their specific architecture.
- Perform vitality process to ensure architecture continues to reflect agency needs and technical opportunities.

Chief Solutions Architect. The Chief Solutions Architect provides the overall technical leadership throughout the lifecycle of a single project or business solution in the areas of data, application and technology. While the Chief Solutions Architect is not generally part of the permanent Enterprise Architecture team, the Chief Solutions Architect plays a vital role in the success of the Enterprise Architecture, ensuring adherence to EA standards, seeking the guidance of EA team members and providing feedback to the EA process. The Chief Solutions Architect may also participate in one or more project tracks of the EA program as a technical or business area specialist. Key responsibilities include:

- Establish the overall solutions architecture framework to guide the design of a business application and the implementation of selected infrastructures such as technologies, platforms, databases, data communications, data discovery and modeling strategy, data access strategy, standards, procedures, processes, quality assurance, training, and other components needed to support the architecture and make it functional.
- Create the high-level technical design and detail technical design.
- Participate in development environment setup, production environment setup, programming, unit testing, final delivery to the Integration Test Team and installation in the production environment.
- Assist with the resolution of design-related issues during system development.

Solutions Architect. The Solutions Architect provides services in support of the Chief Solutions Architect, generally for the implementation of a single business solution or project. Whereas the EA Team prescribes standards and direction, the Solutions Architecture teams actually implement solutions in the context of a focused project or program. Solutions Architects generally have an area of specialization such as presentation, platforms, databases, business logic, security or messaging. Like the Chief Solutions Architect, Solutions Architects generally do not participate directly in the formulation of enterprise architectures but often seek the guidance of the EA team to clarify standards

and to better understand how to implement the stated business direction. Solutions Architects who are the leading subject matter or business experts within an agency may also be called upon to participate in the EA process on a temporary or long-term basis in the role of a Consulting Solutions Architect. Solutions Architects also are an important part of the EA feedback loop, providing updated business, data and system views as well as refinements to important EA standards.

Proposed Clinger-Cohen EA Competencies

Based on the normative approach to EA projects across the federal and private sector, the following are the key areas of responsibility for which competencies and learning objectives will be added to the Clinger-Cohen competencies:

- Chief Enterprise/Enterprise Architects
- Chief Solutions/Consulting Solutions Architects

These areas of responsibility are not intended to constrain the manner in which individual agencies conduct EA efforts, but rather are provided only as a framework for the definition of EA competencies and learning objectives.

Chief Enterprise Architect

The *Chief Enterprise Architect* is a highly experienced IT architect who has a broad and deep understanding of the agency's overall business strategy and general IT trends and directions. A summary of key competencies includes:

- Strong grasp of the value of IT investment in terms of costs, benefits and strategic value
- Extensive knowledge of the agency, its drivers, issues, and strategic directions and plans
- Extensive knowledge of IT capabilities, covering current and emerging technologies
- Able to define an architectural evolution towards the technical strategy in achievable stages
- Experience in a variety of complex architecture projects, able to lead and direct architects
- Highly visible across the agency, opinions and decisions are respected
- Able to lead the development of complex business cases
- Must have depth and breadth of the overall organization, its business needs and objectives
- Is a facilitator of change
- Must be a great communicator

Enterprise Architect

The *Enterprise Architect* is an experienced architect, with additional specialized skills in his or her specific Enterprise Architecture area. A summary of key competencies includes:

- A basic grounding in the agency's environment, strategy and priorities
- Extensive knowledge of IT capabilities, covering current and emerging technologies
- Good knowledge of how similar agencies use or plan to use technology
- Ability to rationalize technology opportunities and business drivers optimizing return on investmentFamiliar with agency's architectural principles and policies, able to interpret and apply
- "Hands on" experience in architecture, able to perform a number of architectural tasks
- Must have a mixture of BPR, business processes, and meeting facility

- Strong in capability modeling
- Can define and understand component capabilities and apply solutions
- Ability to look at technology trends and effectively apply to business/project needs
- Ability to look at and define target architecture for speciality projects
- Ability to manage a repository - repository modeling and analysis
- Competency in several tool sets
- Ability to manage a project portal to identify concepts, work in progress, etc.Able to identify redundancies among existing and proposed IT efforts
- Ability to bring together an overall Enterprise Architecture from several individual EA efforts
- Ability to develop the crux functional integration services that can be implemented in patterns

Consulting Solutions Architect

The *Consulting Solutions Architect* is a Solutions Architect or Chief Solutions Architect that provides "specialist" architectural services to an EA effort when required on a temporary or advisory basis. Specialist areas may include a particular application or business area, or a specific technical skill such as middleware, security, systems management, and so on, indeed the complete spectrum of Solutions Architect capabilities. Most often, the Consulting Solutions Architect is an agency resource, although contractors are often used in this role. A summary of key competencies includes:

- Well grounded in the agency's architectural principles and policies
- Good grounding in the basic capabilities of a given technology or product
- Familiar with agency's enterprise architecture, able to interpret and apply
- System and technical Architecture skills, strong both on theory and on practical implementation
- "Hands on" experience in architecture, able to perform a number of architectural tasks
- Strong technical expertise in one or more technology areas
- Ability to identify and be aware of different levels of EA Ability to perform capability model scenario

APPENDIX B

CIO COUNCIL'S CLINGER-COHEN CORE COMPENTENCIES

CROSSWALKED TO

OPM'S INFORMATION TECHNOLOGY COMPETENCIES

CIO Clinger-Cohen Core Competency to OPM Information Technology Competency Crosswalk[1]

CIO Clinger-Cohen Core Competencies	OPM Information Technology Competencies
1.0 Policy and Organizational 1.1 Department/Agency missions, organization, functions, policies, procedures 1.2 Governing laws and regulations (e.g., Clinger-Cohen, GPRA, PRA, GPEA, OMB Circular A-130 , PDD 63) 1.3 Federal government decision-making, policy making process and budget formulation and execution process 1.4 Linkages and interrelationships among Agency Heads, COO, CIO, and CFO functions 1.5 Intergovernmental programs, policies, and processes 1.6 Privacy and security 1.7 Information Management	**Organizational Awareness** - Knows the organization's mission and functions, and how its social, political, and technological systems work and operates effectively within them; this includes the programs, policies, procedures, rules, and regulations of the organization. **Legal, Government, and Jurisprudence** - Knowledge of laws, legal codes, court procedures, precedents, legal practices and documents, government regulations, executive orders, agency rules, government organization and functions, and the democratic political process. **Financial Management** - Prepares, justifies, and/or administers the budget for program areas; plans, administers, and monitors expenditures to ensure cost-effective support of programs and policies; assesses financial condition of an organization. **External Awareness** – Identifies and understands economic, political, and social trends which affect the organization. **Information Management** - Identifies a need for and knows where or how to gather information; organizes and maintains information or information management systems. **Standards** - Knowledge of standards that either are compliant with or derived from established standards or guidelines.
2.0 Leadership/Managerial 2.1 Defining roles, skill sets, and responsibilities of Senior Officials, CIO staff and stakeholders 2.2 Methods for building federal IT management and technical staff expertise 2.3 Competency testing - standards, certification, and performance assessment 2.4 Partnership/team-building techniques 2.5 Personnel performance management techniques 2.6 Principles and practices of knowledge management 2.7 Practices which attract and retain qualified IT personnel	**Managing Human Resources** - Plans, distributes, coordinates, and monitors work assignments of others; evaluates work performance and provides feedback to others on their performance; ensures that staff are appropriately selected, utilized, and developed, and that they are treated in a fair and equitable manner. **Teamwork** - Encourages and facilitates cooperation, pride, trust, and group identity; fosters commitment and team spirit; works with others to achieve goals. **Leadership** - Influences, motivates, and challenges others; adapts leadership styles to a variety of situations. **Knowledge Management** - Knowledge of the value of collected information and the methods of sharing that information throughout an organization.

1 Based on the September 2000 Clinger-Cohen Core Competencies. U.S. Office of Personnel Management. (2002). [CIO Clinger-Cohen Core Competency to OPM Information Technology Competency Crosswalk]. Unpublished working document.

CIO Clinger-Cohen Core Competency to OPM Information Technology Competency Crosswalk[1]

CIO Clinger-Cohen Core Competencies	OPM Information Technology Competencies
3.0 Process/Change Management 3.1 Techniques/models of organizational development and change 3.2 Techniques and models of process management and control 3.3 Modeling and simulation tools and methods 3.4 Quality improvement models and methods 3.5 Business process redesign/reengineering models and methods	**Organizational Development** - Knowledge of the principles of organizational development and change management theories, and their applications. **Vision** - Envisions a long-term view and initiates organizational change for the future; builds the vision with others; spots opportunities to move the organization toward the vision. **Organizational Awareness** - Knows the organization's mission and functions, and how its social, political, and technological systems work and operates effectively within them; this includes the programs, policies, procedures, rules, and regulations of the organization. **Process Control** - Knowledge of the principles, methods, and procedures used for the automated control of a process, including the design, development, and maintenance of associated software, hardware, and systems. **Modeling and Simulation** - Knowledge of mathematical modeling and simulation tools and techniques to plan and conduct test and evaluation programs, characterize systems support decisions involving requirements, evaluate design alternatives, or support operational preparation. **Business Process Reengineering** - Knowledge of methods, metrics, tools, and techniques of Business Process Reengineering.
4.0 Information Resources Strategy and Planning 4.1 IT baseline assessment analysis 4.2 Interdepartmental, inter-agency IT functional analysis 4.3 IT planning methodologies 4.4 Contingency planning 4.5 Monitoring and evaluation methods and techniques	**Information Resources Strategy and Planning** - Knowledge of the principles, methods, and techniques of information technology (IT) assessment, planning, management, monitoring and evaluation, such as IT baseline assessment, interagency functional analysis, contingency planning and disaster recovery. **Planning and Evaluating** - Organizes work, sets priorities, and determines resource requirements; determines short- or long-term goals and strategies to achieve them; coordinates with other organizations or parts of the organization to accomplish goals; monitors progress and evaluates outcomes. **Strategic Thinking** - Formulates effective strategies consistent with the business and competitive strategy of the organization in a global economy. Examines policy issues and strategic planning with a long-term perspective. Determines objectives and sets priorities; anticipates potential threats or opportunities.

CIO Clinger-Cohen Core Competency to OPM Information Technology Competency Crosswalk[1]

CIO Clinger-Cohen Core Competencies	OPM Information Technology Competencies
5.0 IT Performance Assessment: Models and Methods 5.1 GPRA and IT: Measuring the business value of IT, and customer satisfaction 5.2 Monitoring and measuring new system development: When and how to "pull the plug" on systems 5.3 Measuring IT success: practical and impractical approaches 5.4 Processes and tools for creating, administering, and analyzing survey questionnaires 5.5 Techniques for defining and selecting effective performance measures 5.6 Examples of and criteria for performance evaluation 5.7 Managing IT reviews and oversight processes	**Information Technology Performance Assessment** - Knowledge of the principles, methods and tools (for example, surveys, system performance measures) to assess the effectiveness and practicality of information technology systems. **Systems Testing and Evaluation** - Knowledge of principles, methods, and tools for analyzing and developing systems testing and evaluation procedures and technical characteristics of IT systems, including identifying critical operational issues. **Planning and Evaluating** - Organizes work, sets priorities, and determines resource requirements; determines short- or long-term goals and strategies to achieve them; coordinates with other organizations or parts of the organization to accomplish goals; monitors progress and evaluates outcomes.
6.0 Project/Program Management 6.1 Project scope/requirements management 6.2 Project integration management 6.3 Project time/cost/performance management 6.4 Project quality management 6.5 Project risk management 6.6 Project procurement management	**Project Management** - Knowledge of principles, methods or tools for developing, scheduling, coordinating, and managing projects and resources, including monitoring and inspecting costs, work, and contractor performance. **Risk Management** - Knowledge of methods and tools used for risk assessment and mitigation of risk. **Requirements Analysis** - Knowledge of principles and methods to identify, analyze, specify, design, and manage functional and infrastructure requirements; includes translating functional requirements into technical requirements used for logical design or presenting alternative technologies or approaches. **Contracting/Procurement** - Knowledge of various types of contracts, techniques for contracting or procurement, and contract negotiation and administration; understands the impact of violating these standards on an organization, self, and others; chooses an ethical course of action; is trustworthy. **Planning and Evaluating** - Organizes work, sets priorities, and determines resource requirements; determines short- or long-term goals and strategies to achieve them; coordinates with other organizations or parts of the organization to accomplish goals; monitors progress and evaluates outcomes. **Administration and Management** - Knowledge of planning, coordination, and execution of business functions, resource allocation, and production.

CIO Clinger-Cohen Core Competency to OPM Information Technology Competency Crosswalk[1]

CIO Clinger-Cohen Core Competencies	OPM Information Technology Competencies
7.0 Capital Planning and Investment Assessment 7.1 Best practices 7.2 Cost benefit, economic, and risk analysis 7.3 Risk management- models and methods 7.4 Weighing benefits of alternative IT investments 7.5 Capital investment analysis- models and methods 7.6 Business case analysis 7.7 Integrating performance with mission and budget process 7.8 Investment review process 7.9 Intergovernmental, Federal, State, and Local Projects	**Capital Planning and Investment Assessment** - Knowledge of the principles and methods of capital investment analysis or business case analysis, including return on investment analysis. **Cost-Benefit Analysis** - Knowledge of the principles and methods of cost-benefit analysis, including the time value of money, present value concepts, and quantifying the tangible and intangible benefits. **Risk Management** - Knowledge of methods and tools used for risk assessment and mitigation of risk. **Planning and Evaluating** - Organizes work, sets priorities, and determines resource requirements; determines short- or long-term goals and strategies to achieve them; coordinates with other organizations or parts of the organization to accomplish goals; monitors progress and evaluates outcomes. **External Awareness** - Identifies and keeps up-to-date on key agency policies/priorities and economic, political, and social trends which affect the organization; understands where the organization is headed and how to make a contribution.
8.0 Acquisition 8.1 Alternative functional approaches (necessity, government, IT) analysis 8.2 Alternative acquisition models 8.3 Streamlined acquisition methodologies 8.4 Post-award IT contract management models and methods, including past performance evaluation 8.5 IT acquisition best practices	**Contracting/Procurement** - Knowledge of various types of contracts, techniques for contracting or procurement, and contract negotiation and administration; understands the impact of violating these standards on an organization, self, and others; chooses an ethical course of action; is trustworthy.

CIO Clinger-Cohen Core Competency to OPM Information Technology Competency Crosswalk[1]

CIO Clinger-Cohen Core Competencies	OPM Information Technology Competencies
9.0 E-Government/Electronic Business/Electronic Commerce 9.1 Strategic business issues & changes w/advent of E-Gov/EB/EC 9.2 Web development strategies 9.3 Industry standards and practices for communications 9.4 Channel issues (supply chains) 9.5 Dynamic pricing 9.6 Consumer/citizen information services 9.7 Social issues	**Electronic Commerce (e-Commerce)** - Knowledge of the principles, methods, and tools for conducting business online, including electronic data interchange. **Web Technology** - Knowledge of the principles and methods of web technologies, tools and delivery systems, including web security, privacy policy practices and user interface issues. **Strategic Thinking** - Formulates effective strategies consistent with the business and competitive strategy of the organization in a global economy. Examines policy issues and strategic planning with a long-term perspective. Determines objectives and sets priorities; anticipates potential threats or opportunities. **Customer Service** - Works with clients and customers (that is, any individuals who use or receive the services or products that your work unit produces, including the general public, individuals who work in the agency, other agencies, or organizations outside the Government) to assess their needs, provide information or assistance, resolve their problems, or satisfy their expectations; knows about available products and services; is committed to providing quality products and services. **Standards** - Knowledge of standards that either are compliant with or derived from established standards or guidelines.

CIO Clinger-Cohen Core Competency to OPM Information Technology Competency Crosswalk[1]

CIO Clinger-Cohen Core Competencies	OPM Information Technology Competencies
10.0 IT security/information assurance 10.1 Fundamental principles and best practices in IA 10.2 Threats and vulnerabilities to IT systems 10.3 Legal and policy issues for management and end users 10.4 Sources for IT security assistance 10.5 Standard operating procedures for reacting to intrusions/misuse of federal IT systems	**Information Systems/Network Security** - Knowledge of methods, tools, and procedures, including development of information security plans, to prevent information system vulnerabilities, and provide or restore security of information systems and network services. **Information Systems Security Certification** - Knowledge of the principles, methods, and tools for evaluating information systems security features against a set of specified security requirements. Includes developing security certification and accreditation plans and procedures, documenting deficiencies, reporting corrective actions, and recommending changes to improve the security of information systems. **Information Assurance** - Knowledge of methods and procedures to protect information systems and data by ensuring their availability, authentication, confidentiality, and integrity. **Legal, Government, and Jurisprudence** - Knowledge of laws, legal codes, court procedures, precedents, legal practices and documents, government regulations, executive orders, agency rules, government organization and functions, and the democratic political process. **Risk Management** - Knowledge of methods and tools used for risk assessment and mitigation of risk.

CIO Clinger-Cohen Core Competency to OPM Information Technology Competency Crosswalk[1]

CIO Clinger-Cohen Core Competencies	OPM Information Technology Competencies
11.0 Technical 11.1 Information technology architectures, client/server, collaborative processing, telecommunications 11.2 Emerging/developing technologies 11.3 Information delivery technology (internet, intranet, kiosks, etc.) 11.4 Software development 11.5 Data management	**Technology Awareness** - - Knowledge of developments and new applications of information technology (hardware, software, telecommunications); emerging technologies and their applications to business processes; and applications and implementation of information systems to meet organizational requirements. **Information Technology Architecture** - Knowledge of architectural methodologies used in the design and development of information systems, including the physical structure of a systems' internal operations and interactions with other systems. **Network Management** - Knowledge of the operation, management, and maintenance of network and telecommunication systems and linked systems and peripherals. **Distributed Systems** - Knowledge of the principles, theoretical concepts, and tools underlying distributed computing systems, including their associated components and communication standards. **Telecommunications** - Knowledge of transmissions, broadcasting, switching, control, and operation of telecommunications systems. **Computers and Electronics** - Knowledge of electric circuit boards, processors, chips, and computer hardware and software, including applications and programming. **Web Technology** - Knowledge of the principles and methods of web technologies, tools and delivery systems, including web security, privacy policy practices and user interface issues. **Software Development** - Knowledge of the principles, methods, and tools for designing, developing, and testing software in a given environment. **Data Management** - Knowledge of the principles, procedures, and tools of data management, such as modeling techniques, data backup, data recovery, data dictionaries, data warehousing, data mining, data disposal, and data standardization processes.
12.0 Desktop Technology Tools	**Technology Application** - Uses machines, tools, or equipment effectively; uses computers and computer applications to analyze and communicate information in the appropriate format. **Computers and Electronics** - Knowledge of electric circuit boards, processors, chips, and computer hardware and software, including applications and programming.

APPENDIX C

CIO UNIVERSITY COURSE OFFERINGS

CIO University Offerings

Each university and the course titles are given below for the prospective student to obtain an idea of the general organization and content of each particular program. Specifics can be obtained from the partner institution's web site or contact person.

George Mason University

An 18-month Master of Science program with 36 semester hours of credit. Students completing the program will receive an M.S. degree in Technology Management while completing the academic requirements needed for CIO certification. Instruction in the program is conducted by the School of Management faculty, many of whom have careers in IT and have a focused academic research record in the area. The program includes approaches to evaluating student learning, fundamentals of IT, Clinger-Cohen legislative mandates and other governing laws and regulations a CIO must understand, acquisition reform legislation, competitive structures and pricing within the IT industry, and other topics related to legislation, regulation, and privacy issues within the Federal Government and private industry.

Program Overview: A master's degree program preparing IT professionals for a management career in IT technology firms and organizations.

Tuition: $25,000

Tuition covers all fees, books, case studies, materials, and costs of foreign travel, residency, and instruction.

George Washington University

Delivery Method(s): Live classroom and hands-on state-of-the-art computer lab experiences with small classes.

Curriculum Type: Integrated Master of Science Program in Information Systems Technology

Tuition: Varies per location

Duration: Varies per location

Carnegie Mellon University

Carnegie Mellon's CIO Institute equips executives and IT managers with the knowledge and strategies essential to leading their organization in today's rapidly changing business environment. Programs draw upon Carnegie Mellon's expertise in the following areas to offer a comprehensive, interdisciplinary approach:

- Carnegie Institute of Technology
- Center for Communications and Computer Security
- E-Commerce Institute
- Graduate School of Industrial Administration
- Heinz School of Public Policy and Management
- School of Computer Science
- Software Engineering Institute (SEI) and Computer Emergency Response Team Coordinations Center (CERT/CC)

Whether the user chooses one of the many complete programs offered throughout the year or opts to explore the different programs through varied courses and workshops, these programs will meet both the standards of the CIO University and the diverse needs of IT leaders within the public sector. The CIO Institute courses vary in scope and topics. In addition to those outlined below, courses may be customized to meet the needs of a particular organization.

Federal CIO Certificate Program

Because so much of a CIO's job is being able to work and communicate effectively with leaders in all functional areas of a company, as well as senior management, the Federal CIO Certificate Program is a flexible program for upper-level executives -- specifically CIOs, CTOs, and other executives with IT oversight responsibilities. The program addresses the foundations, concepts, and techniques that form the basis for CIO management today. The courses comprising this program directly address the executive core competencies adopted by the Federal Chief Information Officers Council.

LaSalle University

The Master of Science in Information Technology Leadership (M.S. ITL) provides the foundation of IT and leadership skills needed for mid- to high-level IT or systems managers. It is important for both the technical and business sides of an organization to better understand each other's jobs and functions, especially as technical people assume project management roles.

This program enables students to acquire the conceptual foundation of leadership skills and technology concepts. It will enable them to advance their professional careers as leaders in information technology and to effectively manage human and technical resources. Core competencies include leadership, human resources, project management, communications, financial management, and technical competencies. Combining the

strengths of the University's M.S. Computer Information Science and MBA programs, the M.S. ITL program is meant for those people who wish to become managers of information technology resources.

Requirements

Students must complete between 36 and 45 graduate credits in the Program to complete the M.S. ITL degree. Each student is required to complete the foundation courses, nine core competency courses, two elective courses and the capstone experience.

Syracuse University

Syracuse University School of Information Studies offers a 10-course program of study leading to a Master of Science degree in Information Management. Government, military, and industry executives are eligible to complete a graduate level curriculum that develops leadership and management skills, comprehensively covers CIO competency areas, and provides a rich interactive learning environment with fellow mid-career professionals. Graduates will also be awarded a CIO Certificate from the General Services Administration.

The 10-course program of study includes a 3-course foundation series, a 3-course concentration area, 3 elective courses, and a capstone course that reviews the strategic management of information in organizations. The concentrations provide each student with the opportunity to explore current information management practices in a particular area. Concentration areas include:

- Electronic Government
- Information Security
- Program Management and Resource Planning
- Telecommunications Management
- Data Management

Courses taught in Washington, DC are normally scheduled from 12-6pm on Friday afternoons and occasional Saturday sessions. One-week concentrated courses during summer sessions in Washington, DC and at the main campus are also offered.

Tuition: The tuition and book fee for each 3-unit course is $2,250 at present. There is a $50 application fee and a one-time $150 technology fee for entering students.

Loyola University Chicago
CIO University Graduate Certificate Program

The CIO University Graduate Certificate program offers technology managers the opportunity to complete the requirements for a CIO University certificate and earn graduate credit toward a Master of Science in Information Systems Management. The

courses in the program provide students with the technical and business knowledge needed to understand how to use technology to achieve organizational goals and strategies, manage technology resources, and leverage information for competitive advantage. The program is designed to bring CIO's and technology leaders together to discuss current challenges and issues across the public and private sectors and across industries.

- Program participants have opportunities to discuss relevant issues, problem situations and successful strategies for resolution with other technology leaders who face similar challenges.
- A variety of industries and organizations are represented, thus, diverse solutions to challenging problems are discussed and shared.
- Participants have the opportunity to interface with professors currently conducting research in the area.
- Cases and real world situations are presented and discussed, with an emphasis on practical ramifications.
- Graduate credit earned in the Certificate Program can be transferred to the MSISM (Master of Science in Information Systems Management) or the MBA.
- Courses include Data Management/Data Warehousing, Project Management, Strategic Use of IT, Systems Analysis and Design, Managing Emerging Technologies, Quality Systems Development, Organizational Change, e-Business and CIO Roundtable.

University of Maryland University College

UMUC's Executive Certificate program for CIOs is designed around the competencies developed by the Federal CIO Council in response to the passage of the Information Technology Management Reform Act (Clinger-Cohen). It is a 12-month cohort program in which the student will earn 24 graduate credits in subject areas meeting all the requirements of the Clinger-Cohen core competencies. The program focuses on general management principles of information technology and blends the best practices of the private and public sectors. The program consists of three seminars:

- **Seminar I - 9 credits:** Strategic Issues in Managing Information Technology. This seminar is an overview of critical issues in managing information technology (IT), including a discussion of IT infrastructure changes taking place in the IT industry. The seminar also focuses on the strategic management of innovation and information technology, human resource issues and business ethics.
- **Seminar II - 9 credits:** IT Systems and Operations. This seminar focuses best practices in program and financial management, the state of current information technology, and a look at emerging information technology as it affects organizational goals.
- **Seminar III - 6 credits:** CIO Processes. The CIO's regulatory and legislative environment is the focus of this seminar. Tools which enhance the CIOs ability to effectively manage information technology are examined through modeling and

simulation. It also provides an in-depth look at issues in both government and private sector laws, regulations, and practices in the information technology arena.

Tuition: $16,632, plus a $50 graduate application fee.

Target Audiences for Program: High performing Federal employees, current CIOs, and similar professionals in the IT industry.

APPENDIX D

STAR PROGRAM COURSE OFFERING

STAR Course Description

STAR is a one-week residential seminar program with modules focused on leadership, program and project management, security, government and technology.

Leadership

Leadership emphasizes the effective "Use of Self" in today's organizational environment. The course examines the drivers for leadership. It is based on the leadership principles of Kouses and Posner: Challenging the Process, Inspiring a Shared Vision, Enabling Others to Act, Modeling the Way, and Encouraging the Heart. This leadership segment will address "the Strategic Function of Leadership," "Myself as a Leader," "Individual Leadership Gap Analysis," and "Dimensions of Use of Self."

Leadership is taught by the National Training Laboratory's (NTL) Institute for Applied Behavioral Science. NTL has been on the forefront of leadership training and behavioral science for the past 50 years, laying the foundation for experiential learning as it exists today. The processes of transformation and planned change--the foundation of Organizational Development--were NTL innovations.

Program Management

Program and Project Management examines what senior level executives and managers must know to effectively oversee and manage multiple initiatives, and/or project managers. It is a facilitated workshop experience based on the Project Management Institute's Guide to the Project Management Body of Knowledge (PMBOK). Major instructional elements are: Where Things Go Wrong, Project Management Culture, Stakeholder Management, The Project Front End, Effective Planning, Leading People, and The Program Manager.

Program and Project Management is taught by The Dayton Group (TDG), a consulting and educational consortium of entrepreneurial principals and associates. TDG principals are members of the Project Management Institute (PMI). TDG course instructors and facilitators are certified Project Management Professionals and representatives of the American Project Management Forum (APMF).

Security

Dependence on information technology and interconnecting systems has increased the security risks that organizations experience. The security module explains the dimensions of increased threats and the characteristics of effective responses. Participants will be able to apply threat information to the specific context of their organizations, develop and review policy to deal with threats, and understand selected issues with respect to technological responses to threats. Major instructional elements are: "Security Awareness and IT," "Security Response - Management," and "Security Response - Technical."

Security is taught by staff from the Computer Emergency Response Team Coordination Center (CERT/CC) at the Software Engineering Institute (SEI) of Carnegie Mellon University. Formed in 1988, CERT is recognized for its work with the Internet community, facilitating responses to computer security events involving Internet hosts, its proactive steps to raise the international community's awareness of computer security issues, and its research in improving the security of existing systems worldwide.

Government

Government is taught by the Government Affairs Institute at Georgetown University. The Institute has been conducting courses to entering members, government executives, and industry representatives since 1965. The senior staff of the Institute consists of individuals with academic backgrounds in political science, public administration, law, history, and economics. Most have taught extensively at the university level.

Technology

With policy, financial planning, administrative, and IT functions converging, the Federal leader must understand technology's crucial role in delivering business solutions. Technology facilitates the integration of strategic and tactical initiatives through the application of business principles, IT principles, and industry technology trends. The technology module examines today's trends in the context of real business needs. The curriculum includes intensive training on business and IT public sector industry directions by industry analysts, coupled with the application to problems faced by participants. Major educational elements are: "Public Policy, the IT imperative - Synchronizing Technology and Business" and "Technology, the Horizon - E-government, the Product and Service Marketplace."

Technology is taught by META Group. META Group is a team of internationally recognized industry analysts and consultants who have previously played key roles in public and private sector organizations. Offering advisory services, consulting/benchmarking, and publications that span the full spectrum of IT, META Group addresses the latest technologies, industry trends, and business challenges.

APPENDIX E

INFORMATION RESOURCES MANAGEMENT (IRM)
COLLEGE PARTNER INSTITUTIONS

http://www.ndu.edu/irmc/partnerships/index.html

Academic Partnership Program

Advanced Management Program, CIO Certificate and Information Assurance Certificate Program graduates can apply nine to fifteen graduate hours toward selected Master's and Doctoral degree programs at several regionally accredited partner institutions. The institutions, their websites, applicable degree programs and points of contact information are provided below.

Application of graduate credits to specific degree requirements varies with each institution. The website for the institution provides general information on the degree program; however, you should contact the representative for specific details relating to transfer of credits and admission requirements.

The IRM College actively seeks to develop new academic partnerships in response to student and institutional requests. Check the IRM College's website for the most current version of this listing.

Academic Partnership Matrix

Institution	Degrees Available
Capitol College Graduate School http://www.capitol-college.edu/ POC's VA Tanya Harlee Quantico@capitol-college.edu 703-640-7318 MD Ken Crockett gradschool@capitol-college.edu 301-369-2800, x-3025	Master of Science in Electronic Commerce Management (MSECM) (36 credit hours; all classes on-line; credit hours applied to specific courses.) Master of Science in Information Telecommunications Systems Management (ITSM) (36 credit hours; traditional and/or on-line classes; credit hours applied to specific courses.) 15 credit hours applied for AMP and CIO certificate graduates. Agreement effective for graduates December 2000 and forward.
East Carolina University http://www.ecu.edu School of Industry and Technology http://www.sit.ecu.edu/ POC: Bonnie Eshelman eshelmanb@mail.ecu.edu 252-328-2482	MS in Industrial Technology (MSIT), concentration in Digital Communication Technology (DCT) (36 credit hours; credit hours applied to specific courses; courses available online.) 15 credit hours applied for AMP and CIO certificate graduates. Agreement effective for graduates December 1996 and forward.

http://www.ndu.edu/irmc/partnerships/index.html

George Mason University

School of Public Policy http://cob.jmu.edu/mba POC: Kristine McCord, Director of Graduate Admissions spp@gmu.edu 703-993-8099	Master of Arts in New Professional Studies: Knowledge Management (36 credit hours; four required courses to be completed with a cohort; classes evenings and/or over weekends.) 15 credit hours applied for AMP and CIO certificate graduates. Agreement effective for graduates December 2001 and forward.
School of Information Technology & Engineering http://ite.gmu.edu/ POC: Sandy Mayo 703-993-1640	Master of Science in Information Systems (MSIS) (30 credit hours); Master of Science in Software Engineering (MS-SWE) (30 credit hours); Doctorate of Philosophy in Information Technology; Doctorate of Philosophy in Computer Science (number of credit hours for PhD depends on master's degree transferred; credit hours applied towards specific courses.) 9 credit hours applied for IA Certification graduates. Agreement effective for graduates December 2000 and forward.
School of Information Technology & Engineering http://telecom.gmu.edu/ POC: Dr. Jeremy E. Allnutt jallnutt@gmu.edu 703-993-3810	Masters of Science in Telecommunications (30 credit hours; credits applied towards specific courses.) 9 credit hours applied for IA Certification graduates. Agreement effective for graduates December 2000 and forward.

James Madison University College of Graduate and Professional Programs http://www.jmu.edu/mba/ POC: Kenneth Bahn bahnkd@jmu.edu 540-568-3009	Master of Business Administration, concentration in Information Security (45 credit hours; credits applied towards specific courses; primarily online) Master of Science in Computer Science, concentration in Information Security (33 credit hours; credits applied towards specific courses; cohort distance learning) 15 credit hours applied for AMP and CIO graduates with IA certification/concentration.

http://www.ndu.edu/irmc/partnerships/index.html

	9 credit hours applied for IA Certification graduates. Agreement effective for graduates December 2001 and forward.
Johns Hopkins University Dr. Gerald Masson masson@jhu.edu 410-516-4250	Masters of Science in Security Informatics (MSSI) (30 hours; credits applied to specific courses) 9 credit hours applied for AMP and CIO graduates with IA certificate/concentration. 9 credit hours applied for IA Certificate graduates.

Mississippi State University http://www.msstate.edu/

Bagley College Of Engineering http://www.engr.msstate.edu/	MS in Computer Science (MSC) (20 credit hours required beyond transfer; some courses available online, one year residence required. 15 credit hours for AMP and CIO graduates who possess IA Certification
College of Business and Industry http://www.cbi.msstate.edu/ POC: David Dampier dampier@CS.MsState.edu 662-325-8923	MS in Information Systems (MSIS) (15 credit hours required beyond transfer; credit applied to specific courses) 15 credit hours for AMP and CIO graduates. Agreement effective for graduates December 2000 and forward.

Syracuse University http://www.syracuse.edu School of Information Studies http://istweb.syr.edu/ POC: Admissions: Kathy Allen kallen02@syr.edu 315-443-4251 General Questions: Scott Bernard sabernar@syr.edu 703-532-4243	MS in Information Management, Specialization in Government (30 credit hours; courses available in D.C., Syracuse, or online) MS in Information Management, Concentration in Information Assurance (30 credit hours; courses available in D.C., online, or Syracuse) 15 credit hours applied for AMP and CIO certificate graduates; 9 credit hours applied for IA graduates. Agreement effective for graduates December 1993 and forward.

http://www.ndu.edu/irmc/partnerships/index.html

Towson University Center for Applied Information Technology http://www.towson.edu/cait Patricia Beere pbeere@towson.edu 410-704-4909	Master of Science in Applied Information Technology (33 credit hours; resident only) 9 – 12 credit hours applied for IA Certification graduates. 15 credit hours applied for AMP and CIO graduates who possess IA Certification.
University of Dallas Graduate School of Management http://gsmweb.udallas.edu/info_assurance Eva Carwyle ecarwile@gsm.udallas.edu 972-721-5392	Master of Business Administration, concentration in Information Assurance (MBA/IS) 49 hours; courses available online; credit hours applied to specific courses. 15 credit hours applied for CIO certificate graduates; 9 credit hours applied for IA graduates. Agreement for graduates December 2001 and forward.
University of Maryland, Baltimore County http://www.umaryland.edu The Graduate School and College of Engineering http://www.cisa.umbc.edu/ POC: Alan T. Sherman sherman@umbc.edu 410-455-2666	Master of Science in Computer Science (30-33 credit hours; resident only) Doctorate of Philosophy in Computer Science 9 credit hours applied for IA Certification graduates. Agreement effective for all CIO with concentration in IA and IA Certification graduates.
University of Maryland University College http://www.umuc.edu Graduate School of Management & Technology http://www.umuc.edu/prog/gsmt/ POC: Paul Keller pkeller@umuc.edu 301-985-4616	MS in Computer Systems Management (CSMN) (36-39 credit hours; courses available online; credit hours applied to specific courses) MS in Telecommunications Management (TLMN) (36-39 credit hours; courses available online; credit hours applied to specific courses) 15 credit hours applied for AMP and CIO certificate graduates for CSMN and TLMC; 9 credit hours for MSIT. Agreement effective for graduates April 1995 and forward.
University of North Carolina at Charlotte	Masters of Science in Information Technology (MSIT) (30 credit hours; residence only)

http://www.ndu.edu/irmc/partnerships/index.html

http://www.uncc.edu/ POC: Bill Chu billchu@uncc.edu 704-687-4568	15 credit hours for AMP and CIO graduates who possess IA Certification; 9 credit hours for graduates of IA only. Agreement effective for graduates December 2000 and forward.
University of Tulsa http://www.utulsa.edu Center of Information Security http://www.cis.utulsa.edu/ POC: Sujeet Shenoi sujeet@euler.mcs.utulsa.edu 918-631-3269	Master of Science in Computer Science (concentration in Information Assurance) (30 credit hours; credit hours applied to specific courses; residence only.) Doctorate of Philosophy in Computer Science (concentration in Information Assurance) (90 credit hours, which includes 30 credit hours for transfer of master's degree; 45 additional credit hours needed, if prerequisites are met; credit hours applied to specific courses; residence only.) 15 credit hours for AMP and CIO graduates who possess IA Certification. Agreement effective for graduates December 2000 and forward.

APPENDIX F

GRADUATE SCHOOL, USDA

IT TRAINING PROGRAMS

Graduate School, USDA Programs by Clinger-Cohen Core Competencies

Policy and Organizational
Budget Analysis Workshop, BUDG8100
Budget Analysis Workshop: Advanced, BUDG9100
Budget Execution, BUDG7100
Budget Formulation, BUDG7101
Congressional Budget and Appropriations Process, CFPG9215
Freedom of Information and Privacy Act Workshop, PMGT7000
Fundamentals of IT Management and Capital Planning, TECH7705
Master of Information Management (Degree program with University of Maryland)
Performance Measurement and Budgeting, BUDG8101
Policy for the Federal Executive: What Every Mid-Level and Senior Executive Should Know, EXEC9060
Preparing and Delivering Congressional Testimony, CFPG92330
Working with Congressional Staff, CFPG9220

Leadership/Management
IT Management and Administration for Technical Managers and Technical Professionals, ITEC7723
IT Management for CEOs and Senior Executives, ITEC7724

Process/Change Management
Leading Change, MGMT7201
Management Development, MGMT7099
Modeling Business Rules SOFT7053
Organizational Learning Core Competency Program, LEAD8000
Systems Thinking: A Language for Team Learning and Leadership
Telework: The Role of Supervisors and Managers, MGMT9013

Information Resources Strategy and Planning
Continuity of Operations Planning, PGMT8050
Requirements Analysis and Design SOFT7069

IT Performance Assessment: Models and Methods
Assessing the Reliability of Computer-Processed Data, AUDT8043
Auditing Computer Networks, AUDT8221
Information Systems Auditing, AUDT8025
Strategic Planning for Government Organizations, MGMT9200

Project/Program Management
Microsoft Project, 2000,
Project Management for IT: Application and Integration, PROJ7602
Project Management, PGMT7005

Capital Planning and Investment Assessment
Business Modeling with UML, SOFT7043
Cost-Benefit Analysis Workshop, PGMT8100
Fundamentals of IT Management and Capital Planning, TECH7705
Making a Business Case for Capital Investment, PGMT8200

Acquisition
Performance-Based Statements of Work, ACQI8117

E-Government/Electronic Business/Electronic Commerce
Creating Multi Media Based Web Pages, INET9933
Designing and Building Accessible Web Sites (in Compliance with Section 508), INET9020
E-Government and E-Business Outlook and Future Trends, TCOM8990
Teleprocessing and Data Communications, TCOM8753
Web Developer I, WEBM9010
Web Publisher I, WEBM9020
Web Server Development, WEBM9030

IT Security/Information Assurance
Computer Viruses, Hacking and Intrusion, SRTY7908
Conducting IT Security and Controls Reviews in a Government Environment, AUDT8080
Firewalls and VPN Implementation, SRTY8600
Firewalls Technology, SRTY7600
Fundamentals of Computer Security for Federal Information Systems, SRTY7768
Information Security Specialist Certification Program, SRTY9999
Introduction to Information Security, SRTY7000
Security in IT Applications, SRTY7809

Technical
C# Programming: A Hands-On Introduction, TCOM7087
Introduction to Database and Database Design, SOFT7004
Java Introduction, INET7718
JavaScript Programming, INET7720
Microsoft SQL Server 2000: Introduction, CMAN7856
Microsoft SQL Server 2000: Programming, CMAN7657
Oracle Forms: Introduction, CMAN7711
Oracle: Introduction, CMAN7710
PL/SQL: Introduction (Oracle), CMAN7720
SQL (Oracle): Introduction, CMA7799
Teleprocessing and Data Communications, TCOM8753
Visual Basic.Net Programming: Introduction, TCOM7167

(Multiple courses in various applications software)

Desk Top Technology Tools
Wireless Mobile Networks, COMP7550
Wireless Technology Seminar, SRTY7302

APPENDIX G

FEDERAL EXECUTIVE INSTITUTE

AND THE

MANAGEMENT DEVELOPMENT CENTERS

SAMPLE COURSE LISTING FOR THE FEDERAL EXECUTIVE INSTITUTE AND THE EASTERN AND WESTERN MANAGEMENT DEVELOPMENT CENTERS

360 Degree Leadership
Budget and Performance Integration/Improved Financial Performance
Competitive Sourcing
Contemporary Leadership Issues Seminar
Creating Breakthroughs: Innovating in Government
Crisis Management Skills for Executives and Managers
Customizing and Consulting with Strategic Partners (EMDC/WMDC)
Developing Customer-Focused Organizations
Developing High-Performing Teams
Developing and Communicating Leadership Competencies
Dynamics of Public Policy
Emotional Intelligence as a Leadership Skill
Entrepreneurial Government Management
Executive Communication Skills: Leading the Process of Change
Executive Communications Workshop
Executive Development Seminar: Blended Course
Executive Development Seminar: Leading Change
Executive Forum on Current Issues
Executive Leadership Workshop
Executive Supervisory Skills
Expanded Electronic Government
Facilitative Leadership
Federal Budgetary Policies and Processes
Federal Human Resources Management
Government Performance and Results
Leaders Growing Leaders
Leadership Assessment Program
Leadership Assessment Program II
Leadership Communications Workshop
Leadership Competencies: Enhancing Group Commitment
Leadership Foundations Seminar
Leadership Planning Workshop
Leadership Potential Seminar
Leadership Skills for Non-Supervisors and Non-Managers
Leading in a Virtual Work Environment

Management Assessment Program
Management Development Seminar: Leading Organizations
Managing Complex Projects
Managing Project Teams
Managing Projects Well
Maximizing Human Capital
Maximizing IT Investments
Power Thinking for Leaders
President's Management Agenda Overview
Science, Technology, and Public Policy
Seminar for New Managers: Leading People
Senior Leadership Workshop
Seven Steps to Performance-Based Acquisition and Effective Contract Performance Management
Strategic Diversity: A Business Necessity
Strategic Leadership: Building Performance-Based Organizations
Strategic Leadership: Leading Culture Change
Strategic Management for Executives
Strategic Management of Human Capital
Supervisory Leadership Seminar: Learning to Lead
Team Building and Team Leadership
Territorial Games: Understanding and Ending Turf Wars at Work
The Aspen Institute Executive Seminar
The Aspen Institute Leading Change in Government Seminar
The Aspen Institute Seminar on Leadership, Values, and the Global Community
The Executive Master of Public Administration Degree
The Executive Master of Public Administration Degree: American University
The Executive Master of Public Administration Degree: University of Colorado
The Leadership Assessment Experience
The President's Management Agenda
e-Learning: Training, Education, and Technology

APPENDIX H

SAMPLE LIST OF GOLEARN COURSES

TAKEN BY FEDERAL IT WORKERS

AGENCY	COURSE(S)
Agency for International Development, U.S.	Emotional Intelligence at Work
Broadcasting Bureau of Governors	IT Security Awareness FY2004 - Beginner
	IT Security Awareness FY2003 (Beginner)
	Fundamentals of Internet Security
Consumer Product Safety Commission	IT Security Awareness FY2003 (Beginner)
Court Services and Offender Supervision Agency	IT Security Awareness FY2004 - Beginner
	IT Security Awareness FY2003 (Beginner)
	MS Excel 2000 Fundamentals
	Securing Local Area Networks
	Identifying Viruses
	Project Management: The Fundamentals
Environmental Protection Agency	MS Excel 2000 Fundamentals
	Managing Network Security
	IT Security Awareness FY2003 (Beginner)
	MS Word 2000 Fundamentals
	Securing Local Area Networks
	Fundamentals of Internet Security
	Conquering Conflict through Communication
	Organizational Skills: Time Management
	Project Management: The Fundamentals
	E-mail Etiquette: Writing Effective E-mail Messages
	Writing High-impact Reports and Proposals
	Foundations of Grammar
	e-Learning
	MS Word 2000 Proficient User
	Identifying Viruses
Equal Employment Opportunity Commission	IT Security Awareness FY2003 (Beginner)
	Fundamentals of Internet Security
	Identifying Viruses
	E-mail Etiquette: Writing Effective E-mail Messages
Export-Import Bank of the United States	IT Security Awareness FY2003 (Beginner)
	IT Security Awareness FY2004 - Beginner
	E-mail Etiquette: Writing Effective E-mail Messages
	Project Management: The Fundamentals
	MS Word 2000 Fundamentals
Federal Communications Commission	Emotional Intelligence at Work
	Frontline Leadership: Preparing to Lead
	MS Word 2000 Proficient User
	Advancing Your Service Expertise
	Fundamentals of Internet Security
	Managing Network Security
	Conquering Conflict through Communication
	Identifying Viruses
	IT Security Awareness FY2004 - Beginner
	Preparing as the Interviewee
	Project Management: The Fundamentals
	Conducting Meetings: The Meeting Process
	Coping with Stress

Federal Deposit Insurance Corporation	Server+ Cert Pt 1 Installation
	Fundamentals of Internet Security
	Management Development for Technical Professionals
	Coping with Stress
	Advancing Your Service Expertise
	IT Security Awareness FY2003 (Beginner)
	Time Management: Planning Your Day
	Team Participation: Teamwork Fundamentals
	MS Excel 2002 Fundamentals
	E-mail Etiquette: Writing Effective E-mail Messages
	MS Word 2002 Fundamentals
	CCNT VoIP Essentials
	MS Word 2002 Proficient User
	MS Excel 2002 Proficient User
	MS Word 2002 Expert User
	MS PowerPoint 2000 Proficient User
	Adobe PhotoShop 7.0 Fundamentals
	MS Syst Mgt Server 2.0 Part 1
	Change Management: Adapting to Change
	Management Development for Technical Professionals
	Merit System Principles and Prohibited Personnel Practices
	Essentials of Management: Creating a Positive Workplace
	Essentials of Management: Expert Negotiating
	Essentials of Management: Maintaining a Productive Workforce
	Essentials of Management: Succeeding as a New Manager
	Managerial Leadership: Creating a Vision
	Managerial Leadership: Leading Through Change
	Managerial Leadership: Motivating Employees
	Leadership Development: Delegation
	Leadership Development: Goal Setting
	Leadership Development: Leading the Way
	Leadership Development: Motivation
	Leading The Way: Learning to Lead
	Managing IT Projects: Project Fundamentals and Initiation
	Managing IT Projects: Project Planning and Execution
	Managing IT Projects: Project Control and Closure
	Project Management: The Fundamentals
	Project Management: Scope
	Project Management: Time Management
	Project Management: Estimating Costs
	Project Management: Quality Standards
	Project Management: Risk Management
	Project Management: The Team
	Project Management: Communications
	Project Management: Contracts and Procurement
	Project Management: Coordination
	Project Management: The Process
	Advanced Project Management: Project Estimating Techniques
	Advanced Project Management: Managing Accelerated Projects
	Project Leadership: Leading the Project Team

Federal Deposit Insurance Corporation (Cont.)	Project Leadership: Communicating Within a Project Team Project Leadership: Overcoming Obstacles Project Management Essentials: Planning a Project Project Management Essentials: Project Scheduling and Budgeting Project Management Essentials: Controlling and Closing a Project Business Problem Solving: The Fundamentals Business Problem Solving: The Problem-Solving Process Business Problem Solving: Problem-Solving Teams Managing the Expert: Understanding Experts Managing the Expert: Developing a Successful Environment Managing the Expert: Managing the Unique Needs of Experts Strategic Decision Making: Preparing to Make Decisions Strategic Decision Making: Making the Right Decision Strategic Decision Making: Advanced Decision Making Frontline Leadership: Preparing to Lead Frontline Leadership: Knowledge in the Workplace Frontline Leadership: Positively Influencing Workplace Culture Motivation: Fostering Employee Motivation Motivation: Motivating Through Rewards and Recognition Motivation: Empowering to Increase Motivation Executive Level Leadership: Becoming an Executive Leader Executive Level Leadership: Change and the Executive Leader Executive Level Leadership: Leadership and Communication Succession Planning: Elements and Approaches Succession Planning: Setting up a Succession Planning Program Employee Performance: Managing Difficult People Employee Performance: Providing Feedback Employee Performance: Resolving Conflict Change Management: Managing Change Change Management: Adapting to Change Conducting Meetings: The Meeting Process Conducting Meetings: Managing a Meeting Conducting Meetings: Effective Meeting Communication Facilitation: The Effective Facilitator Facilitation: The Facilitation Process Facilitation: Facilitating Challenging Situations Coaching: Building Relationships Strategic Management: Establishing Strategic Focus Strategic Management: Analyzing Strategic Options Strategic Management: Developing a Successful Process Competitive Intelligence: Analysis and Dissemination Competitive Intelligence: Researching Online Time Management: Developing a Time Management Plan Time Management: Planning Your Day Time Management: Overcoming Time Management Challenges Coaching: Applying the Coaching Process Coaching: Communicating with Employees Interviewing Skills: Conducting an Interview Interviewing Skills: Preparing for an Interview Interviewing Skills: Laws Governing the Interview Process

Federal Deposit Insurance Corporation (Cont.)	Managing Performance: Establishing a Performance Plan
	Managing Performance: The Performance Appraisal Process
	Correcting Performance Problems: Disciplining Employees
	Coping with Stress
	Management Development for Technical Professionals
	Federal IT Investment and Project Management
	MS Excel 2000 Proficient User
	MS Syst Mgt Server 2.0 Part 1
	Management Development for Technical Professionals
	MS Office XP - New Features Part 1
	MS Office XP - New Features Part 2
	Emotional Intelligence at Work
	MS Networking Essentials 2nd Ed Pt 1
	Advancing Your Service Expertise
	MS Win 2000 Active Dir. Pt 1
	Managing Network Security
	MS Project 2002 Fund.
	MS Windows XP Administration Pt 1
	MS Windows XP Administration Pt 2
	MS Windows XP Administration Pt 3
	MS Windows XP Administration Pt 4
	MS Windows XP Administration Pt 5
	MS Project 2000 Fundamentals
	Commerce Computer Security Basics
	Fundamentals of Internet Security
	Conquering Conflict through Communication
	Leading through Change
	Management Development for Technical Professionals
	Emotional Intelligence at Work
	Frontline Leadership: Preparing to Lead
	360-Degree Feedback: Experiencing 360-Degree Feedback
	Negotiating: The Negotiation Process
	XML Programming Part 1
	Business Writing: The Fundamentals
	Excellence in Service: Communicating with Your Customers
	MS PowerPoint 2002 Proficient User
	E-mail Etiquette: Writing Effective E-mail Messages
	Advancing Your Service Expertise
	Coping with Stress
	Time Management: Planning Your Day
	CIW Security Professional Part 1
	IT Security Awareness FY2003 (Beginner)
	MS Excel 2002 Expert User
	Identifying Viruses
	Securing Local Area Networks
	A+ Certification Part 1
	A+ Certification Part 2
	A+ Certification Part 3
	A+ Certification Part 4
	A+ Certification Part 5

Federal Deposit Insurance Corporation (Cont.)	Writing High-impact Reports and Proposals
	MS Excel 2000 Fundamentals
	MS FrontPage 2002 Proficient User
	Effective Presentations: Planning a Presentation
	Organizational Skills: Time Management
	Fundamentals of Internet Security
	Cisco Designing Networks Part 1
	Adobe PhotoShop 7.0 Fundamentals
	MS Access 2002 Fundamentals
	MS Access 2002 Proficient User
	MS Outlook 2002 Fundamentals
	MS Outlook 2002 Proficient User
	MS Access 2002 Expert User
	IT Security Awareness FY2004 - Beginner
	Exploring the New Basics of Business Writing
	HTML 4.0 Fundamentals
	HTML 4.0 Advanced Topics
Federal Election Commission	MS Project 2000 Fundamentals
	MS Visio 2000
	Training for Business Results
	Managing IT Projects: Project Fundamentals and Initiation
General Services Administration	MS Project 2000 Fundamentals
	Leading through Change
	Information Encryption with E-commerce
	Identifying Viruses
	Overview of E-Commerce Security
	Network Security Policy
	Management Development for Technical Professionals
	MS Project 2000 Fundamentals
	IT Security Awareness FY2003 (Beginner)
	Project Management: The Fundamentals
	Security Auditing
	Playing by the Rules
	Fundamentals of Internet Security
	Risk Assessment
	E-mail Etiquette: Writing Effective E-mail Messages
	Federal IT Investment and Project Management
	Commerce Computer Security Basics
	Managing Network Security
	Analyzing Network Security Plans
	What Microsoft .NET Means for IT Professionals
Holocaust Memorial Council, United States	IT Security Awareness FY2003 (Beginner)
	Fundamentals of Internet Security
Institute of Peace, United States	SkillSoft Guided Tour
	Project Management: The Fundamentals
	Management Development for Technical Professionals
	MS Excel 2000 Fundamentals
	MS Word 2000 Fundamentals
	MS Project 2000 Fundamentals
International Trade Commission, United States	MS Project 2000 Fundamentals

International Trade Commission, U.S. (Cont.)	MS Excel 2000 Fundamentals
	MS Word 2000 Fundamentals
	IT Security Awareness FY2003 (Beginner)
	Change Management: Adapting to Change
	Writing High-impact Reports and Proposals
	Coping with Stress
	Emotional Intelligence at Work
	Project Management: The Fundamentals
	Interpersonal Communication: Effective Communication
	MS PowerPoint 2000 Proficient User
	Organizational Skills: Time Management
	Time Management: Planning Your Day
	Effective Presentations: Planning a Presentation
	Management Skills for the Diverse Work Force
	Change Management: Adapting to Change
	Advancing Your Service Expertise
	360-Degree Feedback: Experiencing 360-Degree Feedback
	E-mail Etiquette: Writing Effective E-mail Messages
Merit Systems Protection Board	Sexual Harassment: What Employees Should Know (Service)
	Sexual Harassment: What Managers Should Know (Service)
National Aeronautics and Space Administration	Frontline Leadership: Preparing to Lead
	Project Management: The Fundamentals
	MS Excel 2000 Proficient User
	Identifying Viruses
	Securing Local Area Networks
	MS Excel 2000 Fundamentals
	e-Learning
	Foundations of Grammar
National Archives and Records Administration	Interpersonal Communication: Effective Communication
National Foundation on the Arts and the Humanities	IT Security Awareness FY2003 (Beginner)
National Science Foundation	Getting Started with Project 2002
	Administration Tasks in Linux
	OOAD with the UML: Fundamentals
	Project Cost Control (PMBOK 2000)
	Time Management: Planning Your Day
	Effectively Communicating in Teams
	e-Learning
National Transportation Safety Board	MS PowerPoint 2000 Proficient User
Nuclear Regulatory Commission	Conquering Conflict through Communication
	Conducting Meetings: The Meeting Process
	Federal IT Investment and Project Management
Office of Personnel Management	IT Security Awareness FY2003 (Beginner)
	Project Management: The Fundamentals
	e-Learning
	MS Word 2000 Fundamentals
	MS Excel 2000 Fundamentals
	Fundamentals of Internet Security
	e-Learning
	Getting Started with a Palm Handheld Device
	Up and Running with Project 2002

Office of Personnel Management (Cont.)	IT Security Awareness FY2004 - Beginner
	Excellence in Service: Fundamentals for Managers
	Coping with Stress
	Identifying Viruses
	Change Management: Adapting to Change
	CGI and Encryption
Peace Corps	IT Security Awareness FY2003 (Beginner)
Pension Benefit Guaranty Corporation	Project Management: The Fundamentals
	Excellence in Service: Fundamentals for Managers
Postal Services, United States	Emotional Intelligence at Work
	Project Management: The Fundamentals
	MS Project 2000 Fundamentals
	Fundamentals of Internet Security
	Identifying Viruses
	IT Security Awareness FY2003 (Beginner)
	Managing Network Security
	Securing Local Area Networks
	Coping with Stress
	E-mail Etiquette: Writing Effective E-mail Messages
	Exploring the New Basics of Business Writing
	Management Development for Technical Professionals
	Conquering Conflict through Communication
	Management Skills for the Diverse Work Force
	MS Excel 2000 Proficient User
	Negotiating: The Negotiation Process
	Exploring the New Basics of Business Writing
	MS PowerPoint 2000 Proficient User
	Negotiating: The Negotiation Process
	MS Word 2000 Proficient User
	A+ Certification Part 1
	A+ Certification Part 2
	A+ Certification Part 3
	Leading through Change
	Interpersonal Communication: Effective Communication
	Conducting Meetings: The Meeting Process
	e-Learning
	Sexual Harassment: What Employees Should Know
	Sexual Harassment: What Managers Should Know
Railroad Retirement Board	Securing Local Area Networks
	IT Security Awareness FY2003 (Beginner)
	MS Excel 2000 Fundamentals
	MS Excel 2000 Proficient User
	MS PowerPoint 2000 Proficient User
	MS Word 2000 Fundamentals
Securities and Exchange Commission	IT Security Awareness FY2003 (Beginner)
	Identifying Viruses
	Conquering Conflict through Communication
	Securing Local Area Networks
	E-mail Etiquette: Writing Effective E-mail Messages
	360-Degree Feedback: Experiencing 360-Degree Feedback

Selective Service System	IT Security Awareness FY2003 (Beginner)
	Identifying Viruses
Small Business Administration	Conquering Conflict through Communication
	IT Security Awareness FY2003 (Beginner)
	MS Word 2000 Proficient User
	Effective Presentations: Planning a Presentation
	Conquering Conflict through Communication
	Management Development for Technical Professionals
	Identifying Viruses
	Federal IT Investment and Project Management
Smithsonian Institution	Change Management: Adapting to Change
	C Programming - Part 1
	Conquering Conflict through Communication
	Managing IT Projects: Project Fundamentals and Initiation
	MS Word 2000 Fundamentals
	MS PowerPoint 2000 Proficient User
	Time Management: Planning Your Day
	Organizational Skills: Time Management
	IT Security Awareness FY2003 (Beginner)
	Foundations of Grammar
	Project Management: The Fundamentals
	Fundamentals of Internet Security
	Identifying Viruses
	Managing Network Security
	Securing Local Area Networks
	Commerce Computer Security Basics
	CIW Security Professional Part 1
	MS Project 2000 Fundamentals
	Emotional Intelligence at Work
	Moving From Technical Professional to Manager: Getting Started
	MS Access 2000 DB Apps Pt 1
	HTML Dynamic - Part 1
	MS Access 2000 Fundamentals
	MS Visual Basic .NET-Web Pt 1
	MS Access 2000 Proficient User
	CIW Site Designer Part 1
	MS SQL Server 2000 DB Admin Part 1
	E-mail Etiquette: Writing Effective E-mail Messages
	MS Windows XP Administration Pt 1
Social Security Administration	E-mail Etiquette: Writing Effective E-mail Messages
	Exploring the New Basics of Business Writing
	Frontline Leadership: Preparing to Lead
	IT Security Awareness FY2003 (Beginner)
	IT Security Awareness FY2004 - Beginner
	Fundamentals of Internet Security
	Negotiating: The Negotiation Process
	Management Development for Technical Professionals
	Identifying Viruses
	Managing Network Security
	Securing Local Area Networks

Social Security Administration (Cont.)	Writing High-impact Reports and Proposals Leading through Change MS Project 2000 Fundamentals MS Word 2000 Fundamentals Decision Making & Problem Solving: Decision Making Fundamentals Foundations of Grammar Project Management: The Fundamentals Conquering Conflict through Communication

United States Office of Personnel Management
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SHRP/CTCP/TDG-01