Clinger-Cohen Assessment Survey for 2003

Assessing the Federal IT Workforce

In September 2003, the federal government participated in the first ever, federal-wide information technology (IT) workforce skills assessment. The skills assessment, called the Clinger-Cohen Assessment Survey for 2003 (CCAS 2003), was sponsored by the Federal Chief Information Officers (CIO) Council, the Office of Management and Budget (OMB) e-Gov Office, and the Office of Personnel Management (OPM). The web-based survey collected information from federal IT employees regarding:

- Demographic information such as age and occupational series,
- Current self-assessed proficiency in a variety of competencies and skills,
- Certifications held, and
- Time spent on a series of "specialized job activities."

Drivers for IT Workforce Planning

The survey satisfied the E-Government Act (Section 209) of 2002 requirement to analyze the personnel needs of the federal government relating to IT and information resources management, as well as the annual requirement of the Clinger-Cohen Act to assess the competencies and skills of the federal IT workforce (for competency and skill definitions, please see the following page). Additionally, the survey satisfied the OMB requirement for an IT workforce assessment as outlined in agency passbacks for Budget Year 2004. Survey responses helped to identify areas of needed competency development, and provided Government-wide and Agency-specific inputs to human capital planning efforts.

Defining the IT Workforce

The survey was anonymous and voluntary, and targeted federal civilian employees in IT and IT-related positions. Although they are an integral part of the IT workforce, contractor and military personnel were not surveyed. Occupational series were used to identify the appropriate survey audience including the following traditional IT series:

- GS-0334 Computer Specialist
- GS-0391 Telecommunications
- GS-0854 Computer Engineering
- GS-1550 Computer Science
- GS-2210 Information Technology Management
- Other (including GS-0332, GS-0335, etc.)

Select individuals from "non-traditional" IT series such as GS-0301 (Miscellaneous Administration and Program) and GS-0343 (Management & Program Analysis) were also included in the survey audience but only if they perform IT-related work.

Survey Statistics

The survey typically took respondents 15-20 minutes to complete. Overall, an estimated 76,000 individuals were asked to participate, and 19,827 individuals completed the survey, resulting in a response rate of approximately 26%.

Survey Demographics

The survey included demographic questions relating to age, grade, years of government service, years of IT industry experience, planned retirement, and other factors. Based on the responses, a profile of the "Typical IT Worker" emerged (Figure 1).

The "Typical" IT Worker most often…
…is between 46 and 50 years of age
…is a GS-13 (or FS-3 for Foreign Service)
…has over 20 years of Federal Government experience
…has little to no private sector experience
…is likely to retire in the next 10 to 20 years
…may leave their organization in the next 3 years)
…holds a Bachelor's Degree

Figure 1.

Top Level Assessment

The survey asked respondents to provide a self-assessment of current proficiency in a set of 53 technical and 16 general competencies, which are a subset of those developed by OPM for the GS-2210 occupational series. Respondents assessed their current proficiency using a six-point rating scale (with 0 lowest and 5 highest). Figures 2 and 3 depict the top 10 technical and general competencies based on the combined percentage of responses in the Intermediate, Advanced and Expert proficiency levels.

Technical Competencies		
Competency	% Intermediate or Greater Proficiency	Rank
Hardware	66.93%	1
Configuration Management	64.87%	2
Operating Systems	64.04%	3
Technical Documentation	58.48%	4
Data Management	58.25%	5
Knowledge Management	58.07%	6
Technology Awareness	58.02%	7
Project Management	57.92%	8
Computer Languages	56.11%	9
Standards	55.60%	10

Figure 2.

General Competencies		
Competency	% Intermediate or Greater Proficiency	Rank
Interpersonal Skills	90.46%	1
Problem Solving	89.35%	2
Customer Service	84.41%	3
Decision Making	84.36%	4
Oral Communication	83.98%	5
Leadership	80.99%	6
Planning and Evaluation	80.45%	7
Organizational Awareness	79.52%	8
Influencing/Negotiating	71.30%	9
Administration and Management	60.57%	10

Figure 3.

The survey also asked respondents to provide a self-assessment of current proficiency in a set of 80 IT-related skills. Respondents assessed their current proficiency using a four-point rating scale (with 0 lowest and 3 highest). Figure 4 depicts the top 10 skills based on the combined percentage of responses in the Intermediate and Advanced proficiency levels. The survey also included 46 certification areas. The survey purposely avoided asking for specific certifications and instead focused on certification areas. Figure 5 shows the ten most frequently selected certification areas, based on the total number of responses and the resulting percentage of responses.

Skills		
Skill	**% Intermediate or Greater Proficiency**	**Rank**
Word Processing Software	78.39%	1
Electronic Mail	73.12%	2
Spreadsheet Software	59.73%	3
Internet Browsers	54.44%	4
File Systems	54.15%	5
Flowcharting	53.07%	6
Browsers	52.84%	7
Client-Server	50.86%	8
Understanding and translating user requirements	50.35%	9
Desktop Services	48.86%	10

Figure 4.

Certification Area			
Certificate Area	**# Certified**	**%**	**Rank**
IT Related Technical Certificates from accredited Technical Schools (military or commercial)	1960	9.89%	1
Microsoft	1897	9.57%	2
Comp TIA	869	4.38%	3
Cisco	729	3.68%	4
Novell	653	3.29%	5
Information Systems Security	633	3.19%	6
Project Management	542	2.73%	7
Network Security	391	1.97%	8
Oracle	385	1.94%	9
Information Systems	350	1.77%	10

Figure 5.

In addition, the survey asked respondents to estimate the amount of time they spend (Extensive, Moderate, or Minimal/None) on 10 different "specialized job activities." Figure 6 shows the number and percentage of respondents who spend an Extensive amount of time on each activity.

Specialized Job Activities (Extensive)		
Activity Name	**# Responses**	**%**
IT Project Management	4436	22.37%
IT Security/Information Assurance	2903	14.64%
IT Workforce Management/Development	2358	11.89%
Knowledge Management	1679	8.47%
Records Management	1495	7.54%
Privacy	1118	5.64%
Solutions Architecture	1385	6.99%
Enterprise Architecture (EA)	1259	6.35%
Capital Planning and Investment	1123	5.66%
E-Government	939	4.74%

Figure 6.

The Analysis Phase

Analysis of IT workforce skills survey data, including proficiency in general competencies, technical competencies, IT-related skills, and certifications held, helps to establish the "as-is" or baseline capabilities of the federal government's IT workforce, which in turn serves as an important input to workforce planning. When survey data are paired with other indicators such as the Federal Information Security Management Act (FISMA) and the Capital Asset Plan and Business Case (Exhibit 300s) process, a more comprehensive view of the actual "bench strength" of the federal government IT workforce is provided. Additionally, by linking proficiency in related competencies and skills to the amount of time spent on each activity, inferences may be made regarding whether the workforce has adequate skills and competencies given its workload.

Survey Conclusions

Based on survey data, the IT workforce appears to be aging with few younger individuals to replace the older ones. Notably, approximately 76% of the IT workforce responded that they are older than 40, while roughly 5% indicated they are under 30 years old. In addition, very few respondents are certified in any given area. Generally, more respondents are certified in "holistic" areas (e.g., Project Management, CIO) versus technology-specific ones (e.g., DCG Mux, Lucent, Linux). Next, based on self-assessments, competency proficiencies are higher than skill proficiencies. This discrepancy could reflect that the workforce, in general, is equipped to handle complex jobs/activities without the need to understand how a particular technology works, or alternatively, that the work is less operationally-focused and so skills may not be as central to the job as competencies. Finally, certain competencies (i.e., Capital Planning and Investment Assessment, Contracting/Procurement) and skills (i.e., Federal/OMB Enterprise Architecture, Portal Development) that relate to high-priority specialized job activities and to the evolving mission needs of the Federal Government may need development.

Next Steps

Survey data were provided to each participating organization so that each could conduct its own analysis of survey results. In addition, the Federal CIO Council and OPM will sponsor their next annual IT Workforce Skills Assessment survey in Summer, 2004. The next iteration of the survey intends to provide more functionality and a standardized approach towards establishing competency proficiency "targets," so that gaps between the "as-is" competency baseline and competency targets may be more easily identified and addressed.