Summary

The goal of the workforce skills assessment was to gather information to help the state better meet the training and development needs of its IT professionals, and to identify future needs for IT skills. The project included design, administration, and analysis of two voluntary on-line surveys. The first was directed to IT employees in New York State and the second to chief information officers (CIOs) in state agencies. The two surveys together identified current skill levels as well as the future skills and training needed to meet the state's technology objectives.

The project was sponsored by the New York State Chief Information Officer (CIO) Council's Human Resource Committee in partnership with the Governor's Office of Employee Relations (GOER), and the Office for Technology (OFT). It was supported by the Public Employees Federation (PEF) and the Civil Service Employee Association (CSEA), the two major unions that represent IT employees.

CTG was responsible for project management, survey design and administration, and data analysis and reporting.

The project results included a statewide survey report prepared by CTG and a set of policy and action recommendations prepared by the NYS CIO Council HR Committee.

Publications & Results

Reports and Working Papers (1)

New York State Information Technology Workforce Skills Assessment Statewide Survey Results
Tue, 12 Dec 2006

Information technology (IT) workforce issues have been a concern in New York State since the 1980s and were designated high priority areas in the 2004 and 2005 New York State Enterprise Information Technology Strategic Plans. As a result, in early 2005, the CIO Council HR Committee organized a partnership of state agencies, labor unions, and the Center for Technology in Government (CTG) to help design and administer two surveys. This report provides the key findings of the IT workforce skills assessment surveys administered during March and April 2006; involving nearly 5,000 IT professionals employed in state agencies, authorities, and boards.

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The goal of this assessment is to gather information to help New York State better meet the training and development needs of its IT professionals, and to identify future needs for IT skills. As a result, the State CIO Council Human Resources Committee and its subgroups generated recommendations for next steps and action plans to enhance professional development and skill proficiency for the entire IT workforce.

Summary of results

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Council Human Resources Committee and its subgroups generated recommendations for next steps and action plans to enhance professional development and skill proficiency for the entire IT workforce.

Method

The project included two voluntary online surveys. The first was directed to IT employees and the second to Chief Information Officers (CIOs) in state agencies. The two surveys together produced a comprehensive statewide report [link to statewide report] that includes a current profile of self-reported demographics, skill proficiencies, and training needs of the current state IT workforce, as well as a comprehensive set of agency level IT forecasts for the next three years.

Workforce profile

The demographic data collected through the surveys highlight areas of strength in the NYS workforce, as well as some concerns with respect to future workforce development.

The state IT workforce is well-educated and very experienced. More than 90 percent have some college education and much of that education is concentrated in technical fields (more than one-third hold degrees in computer science, information science, or management information systems). In addition, about 16 percent of IT professionals hold current certifications. The workforce is also very experienced in both state government and agency missions, with long tenures in state service, mostly concentrated in one or two agencies.

Retirements among non-managerial IT professionals may be modest in number for the next three years, although nearly a quarter of IT managers and about one-third of the CIOs expect to retire within that time period. Retirement projections increase substantially for all three groups after 2009. Three-quarters of IT professionals and managers indicated an interest in continuing to work for the state part-time after retirement.

Current skill proficiencies

The skill proficiency data is based on self-assessments by New York State IT employees. They reported their personal level of proficiency on 126 skills associated with IT work in state government.

The greatest existing proficiency is concentrated in management, system design and development, technical support, and legacy technologies.

Lower overall proficiency is associated with networking, Web-based services, security, and information analysis and use. As a broad pattern, younger employees have somewhat higher proficiency in newer technical skills, while older workers are more proficient in management and legacy technologies.

The most striking differences in proficiency patterns are associated with job specialties. Within each specialty area, (such as programming, data administration, or IT management) high proficiency exists in a number of skills appropriate to the specialty.

Training demand

In addition to reporting their personal levels of proficiency, employees also indicated their need for training in each skill.

On average, each employee indicated a need for training in 42 skills, comprising a mixture of general professional and management skills, broad IT concepts, and specific techniques or tools. The level needed ranged from basic to advanced and generally employees chose the level that is one step above their current proficiency. Many commented that they need ongoing training in their particular specialties plus general familiarity with a variety of other areas in order to keep up with constant changes in technology, to understand the broader context of their assignments, and to do a good job of contributing their particular expertise to larger efforts that combine skills and technologies from several specialty areas.

Overall, the greatest demand for training occurs among management skills, followed by skills associated with Web computing and with security functions. Strong demand is also present for skills associated with system design and development and networking. Lesser demand is present for information analysis skills, followed by operations support and mainframe-oriented technologies.

Competency areas

Broad competency areas were constructed to organize the full set of 126 skills into logical clusters. Collectively, these competency areas encompass the entire IT function of state government.

Seven competencies provide an organizing framework for skills development. The competency areas encompass a full range of capabilities for both IT professionals and IT organizations. Collectively, they represent a competency framework that is useful for considering both agency effectiveness and individual proficiency across the full spectrum of IT activities. While no single person or agency could be expected to be an expert in every specific skill, IT employees and IT organizations should generally possess some level of familiarity or proficiency in each of the seven broader competency areas.

Higher proficiency is evident in the competency areas we call management, systems and databases, technical support services, and legacy technologies.

Lower proficiency is evident in the competency areas of infrastructure, Web computing, and management and use of information as an asset.

Training demand is higher in management, Web computing and infrastructure competencies, and lower in systems and databases, management and use of information as an asset, technical support services, and legacy technologies.

Three-year IT forecasts

CIOs assigned a forecast to each of the 126 skills for three years into the future.

Most growth is forecast for infrastructure and Web computing skills. The majority of CIOs chose a growth forecast for more skills in the infrastructure and Web computing competency areas than in the others. Some differences are evident across agencies with different numbers of IT staff, but at least half of the CIOs in agencies with small, medium, and large staff chose a growth forecast for the same fourteen skills, with most emphasis on the infrastructure and Web computing competency areas. These 14 skills include Website design and development, Website management, system security applications, and identity management and directory services, as well as systems integration, project management, and records management.

Gap analysis

The data from both surveys was combined with information from the state's strategic statement of enterprise architecture principles in order to triangulate on the greatest differences between needed skills and existing proficiency.

At the statewide level, the skills that represent strong convergence among low proficiency, high training demand, forecasted growth, and strategic importance fall almost entirely in the competency areas of infrastructure, Web computing, and management and use of information as an asset. Two management skills, business continuity planning and IT risk assessment, also emerged. No appreciable gap was evident for the high-proficiency competency areas of systems and databases, technical support services, or legacy technologies.

When the gap analysis was performed for individual job specialties, the same strong competency-based patterns were evident, although each specialty included a somewhat different set of additional skills relevant to its work content.

Preference in Training Methods

Both employees and CIOs prefer off-site classroom programs. According to employee comments, many approaches (and combinations of approaches) to improving skills proficiency are possible and desirable. These include on- and off-site classes, mentoring, reference books, e-learning, and hands-on practice.

Public Events

Presentation to the Multi-Agency Technology Resource and Information Exchange (MATRIX) -

The NYS Forum

http://www.nysforum.org/pastseminars/skillsassesssurvey-2-16-06/

February 16, 2006

Presenters: Sharon Dawes, Director, CTG and Natalie Helbig, Project Manager, CTG

CTG presented the study methodology and demonstrated the survey instrument to NYS IT professionals. This meeting was one of many outreach meetings the CIO Council HR Committee organized to share information about the project and to promote employee participation.

Government Technology Conference (GTC) East 2006

September 28, 2006

Presenter: Sharon Dawes, Director, CTG

CTG presented the key findings from the statewide skills assessment survey. The venue provided an opportunity for employees and interested parties to ask questions about the findings. This presentation was also a part of the CIO HR Committee outreach plan to share and discuss the survey results with NYS IT professionals.

NYS IT Workforce Skills Assessment Survey Results Session – The NYS Forum

December 12, 2006

Presenter: Natalie Helbig, Project Manager, CTG

As a panel member, Natalie presented the key findings from the statewide skills assessment survey. Additional panel presenters from the CIO HR Committee outlined the committee's recommendations to the State CIO and State training representatives were there to answer questions as part of the CIO HR Committee outreach plan.

Press Releases & News Stories

Presentations and News Stories

Staying in Touch

StateTech

April 4, 2007

IT Workforce Assessment Conducted for New York State Government

Government Technology Magazine

December 12, 2006

NYS IT Workforce Skills Assessment Survey Results Session

NYS Forum

December 12, 2006

New York State IT Workforce Skills Survey Results Presented

The New York State Enterprise, Volume IV Number 5

October 2006

2006 Best of New York Winners Announced

Government Technology Magazine

June 20, 2006

NYS Offers High Caliber IT Training

Open Forum (The New York State Forum), Vol. 19, No. 5

April 2006

New York to Assess State IT Workforce Skills, Needs

Government Technology Magazine

March 18, 2006

New York State IT Workforce Survey Seeks to Find the Talent Behind the Technology

Open Forum (The New York State Forum), Vol. 19, No. 4

February 2006

Partners

Government Partners
- New York State Chief Information Officer (CIO) Council Human Resources Committee (now known as Workforce Development Action Team)
- New York State Governor's Office of Employee Relations (GOER)
- New York State Office for Technology (OFT)

Funding Sources

The project was funded in part by the Governor's Office of Employee Relations.

Original Scope of Work

The employee survey, conducted during March and April 2006, covered nearly 5000 IT professionals employed by about 60 state agencies, authorities, and boards. The CIO survey occurred during the same time period. The surveys addressed 11 groups of skills ranging from programming to system design and development, to IT management, to general administration. The employee survey asked respondents to indicate their current proficiency in specific skills within each group, as well as their need for training in these skills. The CIO survey asked agency IT leaders for their expectations about the need for the same skills three years into the future. Both surveys were based on a similar effort conducted by the federal government.

Survey analysis included current skills profiles as well as future need profiles, and a gap analysis explored the differences between them.

The project results are being used to:

- Provide training opportunities for employees to acquire needed additional skills.
- Develop training courses to meet identified needs.
- Address long-term development needs for employees.
- Assist employees in identifying career opportunities.
- Provide a template for future employee involvement in charting the direction for the IT workforce.

Products included statewide reports and presentations as well as agency-level analyses.

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