

For the past twenty years, several trends have converged to strongly influence the workforce dynamics of business and government. First, nearly every aspect of work has been affected by the introduction of information technology (IT) into our society, economy, and workplaces. Second, relentless demands for efficiency, and continuous improvements in information technologies have combined to reshape both business models and modes of operation, as well as relationships with customers and citizens. As one consequence, government increasingly relies on information technologies to deliver all kinds of programs and services. At the same time, powerful demographic trends associated with the aging of the baby boom generation have created serious concerns about recruitment, retention, and succession planning for the government IT workforce. Over the last ten years, both federal and state governments have become concerned about the effects of losing institutional knowledge and critical skill sets to retirement. These concerns are exacerbated by the burgeoning growth of IT use in the private sector which poses strong competition for skilled IT professionals.

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 and statement of Enterprise Architecture Principles. Since 2003, the New York State CIO Council, Office of the CIO, the Office for Technology (OFT), and oversight agencies such as the Division of the Budget and Department of Civil Service have been working to develop a unified IT strategic plan that includes workforce needs. The CIO Council, made up of senior executives from more than 70 state agencies, authorities, and other organizations is responsible for initiation and oversight of IT policies and strategies for the State. The Council strives to achieve four overarching goals geared toward state government as an enterprise. The goals include optimizing technology investments and value through improved coordination of enterprise IT procurements; fostering architecture methodologies, standardization frameworks, and investments toward better information sharing and security; achieving integrated government through coordination, collaboration and recognizing information as a public asset; and ensuring that a skilled technology workforce is available, trained, and effectively employed.

The CIO Council carries out its work through seven standing committees on leadership, fiscal/procurement topics, security, strategic planning, technology, intergovernmental communications, and human resources. Each committee develops initiatives that translate high-level goals into operational improvements. For the Human Resources (HR) Committee, one key initiative is an effort to document current employee proficiency in IT-related skill sets, identify the training needs of employees, and assess the future direction of IT deployment in NYS. With the assistance of the Center for Technology in Government at the University at Albany/SUNY, and endorsement and financial support from the Governor's Office of Employee Relations, this initiative took the form of a statewide IT skills assessment. The assessment was also supported by the Public Employees Federation (PEF) and the Civil Service Employee Association (CSEA), the two major unions that represent IT employees.

## Purpose of the assessment

The goal of this IT workforce skills assessment is 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 assessment included the 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 identify current skill levels as well as the future skills and training needed to meet the State's technology objectives. The results of the assessment will be used by the HR Committee to better target staff development funds and programs to the needs of employees and the future uses of IT in state government.

## Participants and their roles

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. The partnership took advantage of the strengths of each participating organization as follows:

- **Office of the CIO (OCIO)** – served as executive sponsor and provided a strategic overview of statewide IT needs and coordination among executive agencies and agency CIOs.
- **CIO Council HR Committee** – with expertise in IT, human resources management, and training, Committee members provided project leadership, expert advice, communication, and outreach.
- **Governor's Office of Employee Relations (GOER)** – as the State's labor-management agency, GOER provided funding for the assessment as well as policy advice and links to employee unions.
- **Office for Technology (OFT)** – provided project support, policy advisement, and training expertise.
- **Agency Liaisons** – validated employee lists, acted as contacts for employee questions, and trouble-shooters

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for technical difficulties.

- **State Employee Unions** – the Public Employees Federation (PEF) provided input on the employee survey and encouraged members to respond. The Civil Service Employees Association (CSEA) also endorsed the study.
- **Center for Technology in Government (CTG)** – provided expertise in research design, project planning and management, and analysis. CTG is an applied research center at the University at Albany/SUNY. Since 1993, it has worked in close cooperation with NYS government agencies to analyze issues and explore new approaches to government information strategies and IT and organizational innovation.

## Overview of the assessment methodology

The CIO Council HR Committee named a Skills Inventory Subcommittee in 2005 to determine the most effective way to gather information about employee skill sets, training needs, and future skill needs. After evaluating several alternatives and best practices for obtaining good quality workforce information, the HR Committee recommended that the Office of the CIO and CIO Council use a survey instrument developed by the US Federal Chief Information Officers Council (CIOC), in partnership with the US Office of Personnel Management (OPM). The HR Committee established a project team to implement the skills assessment project and took advantage of this federal instrument and experience to design, administer, and analyze two voluntary on line surveys. The surveys were based on the federal model but extensively customized to the needs of New York State. The first survey was designed for IT employees, and the second for Chief Information Officers (CIOs) in state agencies.

The employee and CIO surveys were conducted during March and April 2006, and involved nearly 5000 IT professionals employed in state agencies, authorities, and boards, including all executive agencies. The employee survey population consisted of all state employees who held one of a specified set of technical job titles as well as other employees in non-technical titles who were identified by their employing agencies as doing agency-level technology work. The CIO survey was sent to the CIOs of each participating state agency.

The on line surveys collected data on 126 skills, ranging from programming and security to system design and development, to IT management, and general management skills. The employee survey asked respondents to rate their current level of proficiency as well as their need for training in each skill. Demographic questions collected data on length of service, retirement intentions, and education. Employees also answered questions about their preferences for training methods and supplied comments and additional information in an open-ended question. The CIO survey covered the same 126 skills but asked these agency IT leaders to forecast the need their individual organizations would have for these skills three years into the future. Similar demographic, training and open-ended questions were also included.

The project team jointly developed a comprehensive communication plan that included a project website, newsletter articles, personal letters to key stakeholders and participants, posters, and outreach meetings. In addition, each agency designated a staff liaison.

A total of 4,882 employees were invited to complete the online skills assessment survey. An overall response rate of 58 percent was achieved with very good representation of respondents by agency size, grade level, job specialty, and age. The CIO survey response rate was 100 percent. The data from the two surveys were analyzed separately and then compared to produce statewide skill profiles, technology forecasts, and a gap analysis.

A more detailed discussion of the methodology and analysis are provided in Appendix A.

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