

Overview

The two surveys provided a great deal of detailed information about current skill proficiencies, training need, and future forecasts for skills. We combined these three kinds of information with a fourth – the New York State IT Enterprise Architecture Principles which identifies key elements of the State’s IT strategy.

Using all these sets of information, we “triangulated” on the skills and competencies that represent strong convergence among low proficiency ratings, high training demand, forecasted growth, and strategic importance. At the statewide level, the skills that emerged from this analysis 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 patterns were evident, although each specialty included a set of additional skills relevant to its work content.

Criteria for assessing need: low proficiency ratings, high training demand, growth forecast, strategic importance

One useful way to determine high priority areas for training investment is to look for the convergence of interests of the major stakeholders – employees, agency IT leaders, and statewide IT leaders. We have done this by starting with the skills for which employees reported low levels of current proficiency. We then refined this list by comparing it to the skills for which there is high employee demand for training. To complement the employee perspective, we identified low-proficiency skills for which agency CIOs reported a growth forecast in the CIO survey. The final refinement was to flag those low-proficiency, high-growth skills that are necessary to achieve the goals expressed in the statewide enterprise architecture principles. Each criterion is defined below:

- **Criterion 1.** Low current proficiency – different definitions are used for statewide and job specialty-specific analyses:
 - A. For the statewide analysis, a mean proficiency rating of 1.5 or less on a scale of 1 (basic) to 4 (expert). The mean for each skill excluded employees who reported their proficiency level as “none” on that skill.
 - B. For analysis of the job specialties, a mean proficiency rating of 2.0 or less on a scale of 1 (none) to 5 (expert). The mean for each skill includes employees who reported their proficiency level as “none” in order to capture lack of proficiency in relevant skills.
- **Criterion 2.** High employee demand for training – these skills fall in the top two quartiles of employee demand for training at any level from basic to advanced. Employees who reported no need for training on a particular skill are excluded from the demand calculation for that skill.
- **Criterion 3.** High growth forecast – at least 50 percent of the CIOs chose “in use and growing” as the three-year forecast for these skills.
- **Criterion 4.** Strategically important to the enterprise – these skills are directly related to achievement of the State’s enterprise architecture goals **and** at least 40 percent of CIOs chose “in use and growing” as the three year forecast.

High impact skill investments

Skills with low proficiency ratings and various combinations of high training demand and high strategic or future need are considered “high impact skills” worthy of high-priority investments. That is, they represent the areas where investments to increase employee proficiency are most likely to result in more strategic and effective use of IT in state government. Figure 1 illustrates this convergence of interests.

We designated a skill as a “high impact skill investment” if it met one of the following tests:

- Low proficiency ratings + high training demand + high growth forecast + strategically important
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Statewide Gap Analysis

The statewide gap analysis highlighted fourteen specific skills distributed across four of the six competency areas as shown in Table 16.

Table 16. High impact skill investments

Competency Area	Specific skills
Management	<ul style="list-style-type: none"> • Business continuity planning • IT risk assessment and management
Infrastructure	<ul style="list-style-type: none"> • Systems security applications • Identity management & directory services • Encryption • Intrusion detection • Firewalls • Wireless technologies
Web computing	<ul style="list-style-type: none"> • Java • XML/XSL • Website privacy
Systems and databases	
Technical support services	
Management and use of information as an asset	<ul style="list-style-type: none"> • Content management • Data warehousing • Records management
Legacy technologies	

Patterns by job specialty

We performed the same analysis for each job specialty to identify the high impact skill investments that pertain to each kind of IT specialization. Very similar results were produced. None of the high impact skills for any job specialty fell in either the technical support services or legacy technologies competency areas. Conversely, every specialty includes high impact skills in the competencies of infrastructure, web computing, and use and management of information as an asset. Moreover, many of the same individual skills occur in all or nearly all specialty areas. (The full results by job specialty are shown in Table E15 in Appendix E.)

All specialties except IT managers included high impact investments in the management competency area. This is not surprising, given the generally high level of management proficiency ratings among IT managers. Among the technical specialties, operations included the fewest number of high impact skills, while the business and other technical specialties had the most. These last results probably reflect the wide range of job assignments that can be found among employees whose titles fall in these last two specialty areas. In these two groups, agency level analyses will probably reveal clearer patterns than the statewide assessment is able to provide.