

### Using the competencies as an organizing framework for skills development

The seven 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 ratings across the full spectrum of IT activities. In this sense, no single person or agency could be expected to be expert in every individual skill, but (with the possible exception of legacy technologies) IT employees and organizations should possess some level of proficiency in each of the seven competency areas. The optimal degree of proficiency for an individual depends on his or her job specialty, work assignments, and level of responsibility. For example, a journeyman data communications specialist should have advanced or expert proficiency in the skills that comprise the core of this specialty area. This same person should have at least basic knowledge of the key principles and methodologies that make up the other competency areas. Many of the open-ended comments reflected a desire for this breadth of knowledge on the part of employees.

**“Each IT track in the state workforce should have a basic understanding of the others. As an applications programmer, I may not need to be an expert in the tools used by Security or Operations, but a basic understanding of what they use and why would certainly improve my ability to respond to and understand their requests and to know what I need or can ask for from those resources.”**

**“Technical training is usually only given to technicians (programmers, DBAs, network administrators). However, the managers of those who are actually ‘hands-on’ rarely get any training to keep them up-to-date. There should be corresponding management-level type courses to help managers and supervisors remain current with their staff.”**

Optimal proficiency for agency IT organizations depends on organizational context and the nature of the relationship between IT and the agency’s overall mission. A large agency with extensive infrastructure, large application systems, and many employees who handle sensitive transactions needs high levels of proficiency in areas such as security, IT management, and technical support services. A small agency that relies on the Office for Technology to provide centralized infrastructure and high-level technical services still needs at least basic proficiency in the principles of security and system design, while it may concentrate its own expertise in other areas such as content management. Some agencies can segment their IT workers into specialty areas, others need a broad range of capabilities concentrated in only a few individuals.

**“The demands on an IT person working in a small bureau are over looked. The multitude of skills required to do it all are so many that becoming proficient at any one is impossible. One minute it's coordinating roll outs of new equipment, the next it's Internal Control reports, then update web pages, test new applications . . . develop business continuity plan [and so on]. There is really no way to follow one path of proficiency. With staff down to minimum, small bureaus require this type of person to do it all.”**

For all these reasons, the competency framework helps illustrate how staff development efforts could be organized into customizable competency-based programs that combine courses in related sets of skills into coherent curricula that include complementary topics and appropriate levels of intensity. The idea is to help employees acquire sets of related or complementary skills that round out their competency in all seven areas.

### Employee motivations for training

Participants were asked to report the reasons they believed training was worthwhile to them. Multiple answers were allowed. Nearly all employees (92 percent) reported that training is worthwhile to improve their ability to do their existing work. Similarly, 83 percent said that training would prepare them for more demanding work and a greater variety of assignments. Table 16 in Appendix E provides the full set of responses.

**“IT skills necessary to keep an organization afloat, let alone lead one to excellence are continually changing and extremely demanding. This year alone I've been involved in projects where network administration, OOP (Java and VB), COBOL, security, budgeting/financing, web design, WAS, and basic supervision and management skills are all needed.”**

**“Changing technologies will require me in the future to use technologies which are little or no part of my current tasks. Once I have training in these areas I will be able to help in expanding the agency's ongoing transition to those technologies. Staff who are assigned to older technologies and not given training for newer technologies may feel they are in a dead-end situation. This can have an impact on motivation and morale.”**

### Employee preferences for learning methods and communication

Participants were asked their preferences for learning three different types of skills: specific technical tools (such as software languages), general IT skills (such as design principles), and management skills (such as negotiation and conflict resolution). They were asked to choose the top two from among eight different methods for each skills category. Overwhelmingly, the most preferred method across all three categories was off-site classroom training. (See Table E17 in Appendix E). On-site classroom training was the second most preferred method. Self-paced e-learning garnered some interest for learning specific technical tools and general IT skills.

**“I currently take part in the e-learning program that my agency offers. I find it very informative. My problem is allocating a block of time to actually work on the e-learning, without letting something else slide. Classroom training has its advantages, because it makes you leave the worksite and you can focus on that class the entire time.”**

In addition, many emphasized the need for practical application in addition to instruction.

**“Training should be instructor led and should allow workers to get hands-on experience, if possible, in various areas. It is important to focus on real-life situations and to develop a real understanding of topics, as opposed to focusing on abstract ideas.”**

A number of respondents offered suggestions for combining different training methods to get better results. For example, several said good quality books help them get familiar with a topic and serve as references after formal training has occurred. In a similar vein, some stated that e-learning is good for an introduction to a skill but it needs to be followed by more intensive and interactive methods if more than ‘familiarity’ is needed. Others recommended that formal training be combined with mentoring and coaching. Some advocated for college-level courses in some areas as well as the opportunity to attend technical conferences.

Many commented that the training they receive is often good quality, but the timing is ineffective, occurring, for example, when the funding is available rather than when the need and opportunity to apply the skill is imminent. Consequently, the training experience (and expense) can be mostly or entirely wasted.

Participants were also asked how they preferred to be informed of IT training opportunities. Nearly all (95 percent) chose e-mail. The second most selected option (53 percent) was to be informed through their agency’s Intranet (see Table E18 in Appendix E).

### CIO preferences for training methods and professional certifications

CIOs also overwhelmingly supported off-site classroom training for employees. For each of the three types of training surveyed, CIOs rate this method as their number one choice.

CIOs also favor professional certifications for a number of skill types. Three-quarters of the CIOs reported that professional certifications would or might be helpful in accomplishing their agencies’ missions over the next three years. Of the kinds of certifications investigated, four were endorsed by 60 percent or more of the CIOs. These were project management, information systems security, network security, and databases. Currently, only 1-2 percent of employees hold certifications in these areas. (Table E 19 in Appendix E shows the number of employees holding current certifications and Table E20 presents the CIOs’ preferences for certifications.)

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