

Rebuilding The IT Organization For Convergence

Dave Wilcox

Staff members' roles will change, and so will the work they do. Here's a framework for restructuring and refocusing.

Convergence has both employers and IT professionals requiring a broad and deep knowledge of both the hardware and software involved in end device-to-end device communications, including the specifics of internal delivery systems. Companies armed with this capability will be able to ensure the delivery of effective and efficient solutions that support competitive business practices.

Yet even those industry professionals who have developed an understanding of these issues have not necessarily found a way to address the impact that these rapid, in some cases revolutionary, changes are having on the technology workforce, which often remains aligned to traditional technical specializations.

Companies recognize that their incumbent technical workforce typically does not possess the breadth of skills required to successfully function in this new environment. They also recognize that the available workforce pool, much of which was educated and trained in the IT or telecom specialty era of the recent past, does not possess the broad technology foundation or the deeper technical training and knowledge required of professionals working in the new, converged space. Technicians too often lack sufficient breadth of knowledge to solve problems outside their narrow sphere of technical competence.

Convergence affects both business practices and the approach for staffing and training the workforce. Today's employer now appears to be asking for more than rote technical skills—they want a workforce that can adapt and develop new expertise as the technology continues to rapidly change. Likewise, students in degree or technical training programs want to be sure that today's

technical education will prepare a platform for continuing study to advance their careers.

The ongoing changes in our industry require a sustainable process to dynamically adapt and update curricula and training programs. Educators and trainers who regularly incorporate relevant changes into their technology programs need to stay current with industry requirements and avoid program obsolescence. Enterprises will also need to organize their courses within the context of their business processes, and not treat training as an *ad hoc* event. This approach will help to keep their incumbent workforce training programs current and job-specific.

Both industry and educators are challenged in creating role-based learning content. The challenge for educating the workforce for the converged enterprise is clear when we examine the approach taken in formal education. Many of the public and private educational institutions that maintain the pipeline of talent lack the resources to continue to build new curricula and maintain existing courseware. Moreover, these curricula need to be built around validated industry requirements to ensure the training content accurately reflects the changing workplace demands. The pace of change coupled with the continuing need to develop and maintain content combines to put additional pressure on these institutions.

What Are ICT Skill Standards?

During 2001–2003, the National Skill Standards Board, in coordination with more than 200 IT and telecom companies and associated educational institutions, developed Information Communications Technology (ICT) Skill Standards that define the knowledge and skill requirements for the technician workforce in the deployment, application, and maintenance elements of the IT industry.

This development work required a substantial public and private investment, and was validated by experts and incumbent workers across the country. The Skill Standards model serves as the organizing framework of job-specific information

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to inform training design and certification development for the ICT professional.

The industry benefits from the skill standards framework as a blueprint that educational institutions and certification providers will leverage to ensure current and valid content is embedded in their offerings. This framework can also provide critical information for corporate human capital development and planning functions.

The validation of the Skill Standards model results in a database that links specific role-based technical knowledge and skills including academic (math, science) and employability (soft skills) knowledge and skills to primary business processes. The model represents the first-ever enumeration in the U.S. of front-line work and relevant knowledge and skills associated with the converged world.

The database can automatically provide employers with information, not only about the knowledge and skills required to perform specific business processes, but also the levels of knowledge and skills that individuals will need to perform the work in a competent manner. Instead of focusing on the different technologies (i.e., voice vs. data) as the defining characteristics of the work force, educators are provided a curriculum map based upon the actual work that needs to be done. The ICT Skill Standards provides information about the knowledge and skills required to perform critical ICT business processes in the converged world.

Skill Standards were not developed for specific jobs, *per se*, but for categories of work defined in terms of work functions. These categories are referred to as “concentrations” of work (Table 1). The purpose of these concentrations is to organize work into a manageable number of categories that represent separate and critical components of work. This is done to guarantee that the standards will apply across a sector (ICT) that defines jobs very differently from company to company; it also reflects the way work is organized in today’s high-performance workplace.

To the maximum extent possible, each concentration, while related to the other concentrations, contains tasks, skills and knowledge unique to that concentration. These concentrations describe work that is performed by ICT technicians in a wide range of industries, and represent an attempt to capture the rapidly evolving nature of work.

A research-driven model is an important tool for structuring a comprehensive education and workforce development strategy. The initial research has been extended and enhanced over the last four years by The Global Skills Xchange in research projects with leading industry associations, academic institutions and ICT employers. The predominant applications have been for certification development and maintenance. The importance of ICT business processes in developing and maintaining customer value means all of the ICT applications are high stakes, and education resources need to be developed with a high



Change management is a critical element

TABLE 1 Concentrations Of Work

Concentration	Description
Network Infrastructure	Work processes such as; Troubleshooting and maintaining the wired, wireless or satellite network. Includes data, voice and video transmission, routing and switching on these networks. Requires working with integrated services and multivendor products. Includes monitoring, maintenance, upgrades, and security.
Programming	Work processes such as: Writing, maintaining and updating computer codes. Includes performing computer programming for applications or portions of applications.
Web Development and Administration	Work processes such as: Analyzing, designing, developing, adapting, testing and maintaining Web-based applications and services.
Database Development and Administration	Work processes such as: Designing and forming databases so users can create data queries and interpret results. This includes: managing the growth of the database; keeping data secure and creating security procedures; implementing backup and recovery processes; maintaining system security and reliability.
Digital Media	Work processes such as: Designing, editing and developing audio, video, graphic and animations for Web and non-web uses. This includes: using specialized software applications to create digital media for kiosks, computer applications, websites, print media, broadcast media and entertainment.
Network Devices	Work processes such as: Troubleshooting and maintaining desktop and laptop computers, computer devices such as PDAs, computer peripherals, and other devices that connect to a network or computer including cellular telephones, palm computers, beepers, etc. This includes: managing a LAN and administering the LAN server for a small group.
Technical Writing	Work processes such as: Designing and writing documentation and user guides for technology equipment and systems such as computers, computer equipment and software products.

Today's competitive business environment demands that ICT organizations create value

level of rigor to create assurances of the validity and reliability of the information.

Accounting For Changes In The ICT Landscape

How might new and emerging technologies and trends affect ICT content areas, business processes, job design, work information, worker information and certification information? If the role requirements developed to support these changing processes are still evolving, how are companies going to hire and promote employees to manage these processes?

Adopting a change management strategy to deal with such transition requires a more complete understanding of the changes that can occur during convergence. Understanding the nature of change in ICT is critical because this allows companies to better gauge how changes to the ICT landscape might affect ICT content areas, and to be prepared to accommodate these changes while maintaining the integrity of the content. A company's adoption of new and emerging ICT trends and technologies can result in three types of organizational changes:

■ **Organizational Restructuring**—This refers to shifts in the way an organization structures its work in order to fulfill its mission and competitive strategy. For example, as a response to new or emerging trends or technologies, a particular organization may change its departmental structure to create efficiencies through better coordination of work.

Hence, restructuring necessarily affects the strength of the relationships between “concentrations” of ICT work. But it does not necessarily mean a change in ICT professionals' roles and responsibilities (see “structural change” below) or even the knowledge and skills they need to perform their work (see “evolutionary shift” below).

■ **Structural Change**—This type of change affects the description of the work associated with a “concentration” and the skills ICT professionals need to enact their redefined set of work; it refers to major shifts in the way ICT professionals fulfill their roles and responsibilities in order to meet their shifting objectives. For example, the proliferation of commercial-off-the-shelf (COTS) applications changes the role of application developers to focus more on configuring the COTS application for local use, instead of writing programming codes to develop the application in house.

■ **Evolutionary Shift**—This type of change refers to shifts in what ICT professionals will need to know in order to meet their objectives and fulfill their charge. In this case, the work itself does not change, what changes is the base of knowledge and skills required to successfully perform the work.

For example, the introduction of the Microsoft Vista Operating System necessarily results in a need for ICT support services personnel to update their knowledge of operating systems. But it does

not fundamentally change the functions and tasks that they need to be able to do (e.g., delivery of customer support services including installation, configuration, troubleshooting, etc.).

The approach to addressing these changes requires a flexible model designed to incorporate the changes in both the business processes and the knowledge and skill required to enable those processes. Unless it adopts a model for effective change management, the enterprise will continually fail to optimize its investments in software and hardware.

The danger in continuing to conduct business as usual during periods of change will be seen in declining customer retention and, as a direct result, revenue and profit. The high level of risk associated with the failure to effectively adapt places new and profound importance on how work is structured and performed.

Improving Coordination: Structuring The Organization's Work

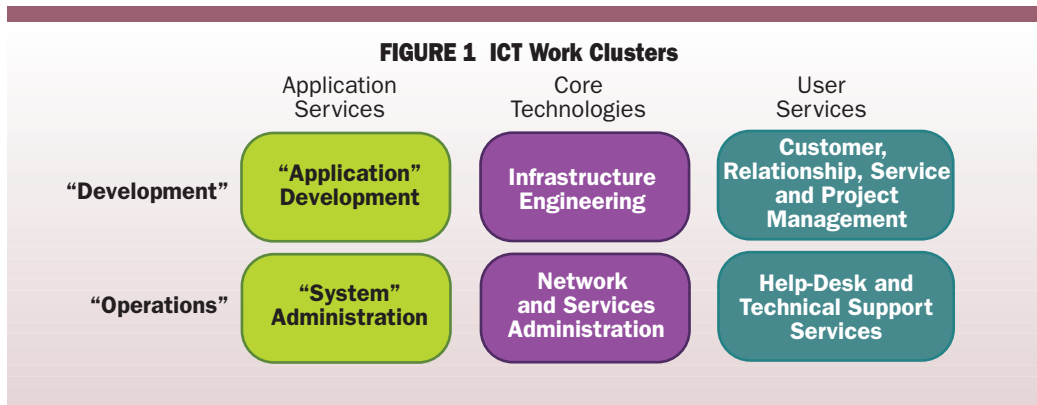
Today's competitive business environment places greater demands on ICT organizations to create value. They do so by contributing to both their firms' bottom and top lines. ICT organizations contribute to the former by reducing the firms' costs of doing business; and they contribute to the latter by providing ICT-enabled capabilities that afford a competitive advantage. To create greater value for firms, IT organizations are focusing more and more on three key objectives:

- 1.) Develop solutions that are based on a clear and full understanding of the needs and constraints of the business.
- 2.) Deploy those solutions seamlessly (i.e., with as little disruption to the business as feasible).
- 3.) Operate and maintain those solutions efficiently and effectively.

As a result, ICT organizations are forced to place greater emphasis on the efficiency and effectiveness with which they coordinate their work. Some have done so by structuring their organizations to focus on specific stakeholders' needs, instead of focusing on technology. Others have adopted standardized processes and best practices for doing ICT work. And yet others have done so by “raising the bar” of what they expect ICT professionals need to know and be able to do.

Figure 1 shows how some ICT organizations have restructured the way they do their work. Our recent research suggests that the goal of these “organizational restructuring” initiatives appears to be to facilitate the pursuit of the aforementioned three key objectives.

For example, the figure shows, depending on the size of the enterprise, a distinction between IT professionals involved with “development” and those involved with “operations.” Those involved with “development” address the first two objectives (i.e., develop and deploy solutions) while those involved with “operations” focus more on



U.S. workers will suffer if the ICT job market becomes commoditized

the third objective (i.e., operate and maintain solutions).

Research also shows that ICT organizations are clustering their work into three groups.

1.) The Application Services group performs clusters of work associated with the design, development, implementation, administration and/or maintenance of applications or services that automate or enable business processes. The focus of this group is to ensure that the firms’ need for “line of business” applications and services are appropriately addressed.

2.) The Core Technologies group performs clusters of work associated with the design, development, implementation, administration and/or maintenance of organization’s ICT infrastructure (both the logical and physical components of the organizations’ ICT networks and infrastructure). The focus of this group is to ensure that firms’ enterprise-wide needs are being appropriately addressed.

3.) The User Services group performs clusters of work that focus on establishing and maintaining relationship with clients and on providing technical support to end-users. The “Operational” side of this group typically includes individuals who serve as the single point of contact between the users and the provider of ICT services regarding problems, incidents or inquiries related to systems in production. The “Development” side of this group typically includes individuals who serve as points of contact for stakeholders interested in a service the ICT organization provides.

The 21st Century ICT Professional

The development of ICT professionals serves as a differentiator for customer-focused enterprises. Ironically, the ICT technological advancements leveraged by U.S.-based global corporations has helped speed innovation while expediting the emergence of new competitors within advancing economies, i.e., China and India.

The “mobility of work” has created a new set of challenges while offering distinct opportunities for ICT business processes to play a more critical role in supporting the enterprise. Those involved in critical human capital management processes

such as staffing and training need to understand these changes, and they must design solutions that incorporate new requirements.

ICT educators must first recognize that a set of skills, when taken alone, are just commodities, and a job market based on commodities favors the lowest bidder. In a commodities-based market, workers from the U.S. will not be competitive.

While much is being said about the value of “soft” skills and other essential non-technical skills, a truer measure of added value is to know how the work supports the broader goals of the organization. The 21st century professional needs to know more than “how” to apply the skills that he/she knows to a particular task. Today, “where,” “why,” and “when” must also be applied as part of a broader strategy of systems design and troubleshooting. Core knowledge of technology principles and the application of skills based in a business and industry context are particularly crucial in the preparation of ICT professionals, as the ICT industry integrates new and emerging technologies into their operations.