




# INFORMATION TECHNOLOGY

A bar chart graphic with seven vertical bars of increasing height from left to right, positioned to the right of the word 'TECHNOLOGY'.

## Identifying and Addressing Workforce Challenges in the Information Technology Industry

### Executive Summary



# Executive Summary

## Introduction

A major priority of the U.S. Department of Labor's Employment and Training Administration (ETA) is to expand the capacity of the local workforce system to be market-driven, responsive to local economic needs, and a contributor to the regional economic competitiveness of communities. Fields like health care, retail trade, and financial services have jobs and solid career paths left open due to a lack of people qualified to fill them. Through targeted investment of workforce development resources and support for private and public sector partnerships, ETA ensures the development of workers' skills in growing occupations and industries.

Similar to other developed nations, the economy of the United States is fueled by innovation. In the face of a global economy, employers are using new productivity-enhancing technologies to remain competitive. Two-thirds of America's economic growth in the 1990s resulted from the introduction of new technologies. This continual process of innovation and technological change has resulted in jobs that demand ever-higher skill levels. For example, BLS projections for 2004 through 2014 indicate that 63 percent of all new jobs of the 21st century require some post-secondary education<sup>1</sup>.

The mission of ETA is to contribute to the more efficient and effective functioning of the U.S. labor market by providing high quality job training, employment assistance, labor market information, and income maintenance. These services are provided primarily through state and local workforce investment system. While the federal government invests \$15 billion annually in workforce development programs, private sector employers and individuals invest far larger amounts. ETA is responsible for ensuring that the federal funding is utilized in the most effective manner possible.

Two of ETA's primary goals are complementary: 1) to provide America's businesses with the highest-quality workers possible, and; 2) to link skilled workers to jobs in high-growth, high-demand industries. This relationship enables workers to live more productive and prosperous lives and businesses to be more competitive in the global economy, ensuring no worker is left behind. Recognizing the inextricable ties between workforce development and economic development, ETA promotes partnerships among community colleges and other educational institutions, private industry, and workforce and economic development entities.

Capitalizing on the power of partnerships is helping ETA to create a demand-driven approach to workforce development, which focuses the workforce investment system on giving workers readily useable skills, knowledge, and information that are most needed by employers, particularly in high-growth occupations with career potential, like information technology. In the past, the U.S. workforce investment system has often focused more on the supply of workers than on the demands of the labor market, with the result that workers sometimes received training for jobs that did not exist. Without

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<sup>1</sup> Bureau of Labor Statistics, Employment Projections program, National Employment Matrix 2004-2014.

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aligning training programs with the demands of the labor market, the workforce system was not helping American businesses remain competitive in the global economy. In addition, workers often did not receive the benefits of possessing skills that were of value and high demand in the marketplace, such as higher wages and improved job security.

In seeking to align the workforce investment system more closely with the demands of the labor market, ETA has focused on the following goals. First, to meet the demands of businesses by providing adults and youth from traditional and non-traditional labor pools with the educational, occupational, and other skills training and services needed for high demand occupations. Second, to bring together resources devoted to employment, education, and economic development, and use them strategically to create opportunities for workers. A demand-driven workforce investment system will help the U.S. economy meet the increasing challenges of globalization, changing demographics, and the rapid pace of technological innovation.

### **The High Growth Job Training Initiative**

The High Growth Job Training Initiative seeks to provide national leadership for a demand-driven workforce system. It is a strategic effort to prepare workers for new and increasing job opportunities in high growth/high demand and economically vital industries of the American economy. This initiative is part of a series of actions that ETA has taken to engage business, education and the workforce investment system to work together to develop solutions to the workforce challenges facing high growth industries. By expanding the local workforce system's capacity to be market-driven, responsive to local economic needs, and a contributor to the economic well-being of the community, ETA is promoting workforce quality, enhanced productivity, and economic competitiveness.

Through the High Growth Job Training Initiative, ETA works with industry leaders to identify their critical workforce challenges, and invests in demonstration projects that help individuals gain the skills they need for successful careers in these expanding or transforming industries. The Initiative targets education and skills development resources toward helping workers gain the skills they need to build successful careers in these and other growing industries. The foundation of this initiative is partnerships between the publicly funded workforce investment system, business and industry representatives, economic development entities, and education and training providers. The purpose of these partnerships is to develop innovative solutions or replicate effective models that address a targeted industry's workforce challenges.

### **Information Technology**

In today's global economy, advancements in technology applications extend across multiple industries, creating the demand for transferable, basic IT skills and competencies among new hires and incumbent workers at almost all levels of employment. The implication of this is a cross-industry workforce challenge and is simply stated—to prepare an adaptable workforce with the requisite basic IT skills.

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In IT-related fields, the computer systems design and related services sector is among the economy's largest and fastest sources of employment growth. Employment increased by 616,000 jobs over the 1994–2004 period, posting a staggering 8.0-percent annual growth rate. The projected 2004–14 employment increase of 453,000 translates into a total of 1.6 million jobs, and represents a relatively slower annual growth rate of 3.4 percent as productivity increases and offshore outsourcing take their toll<sup>2</sup>.

However, the main growth catalyst for this industry is expected to be the persistent evolution of technology and businesses' constant efforts to absorb and integrate these resources to enhance their productivity and expand their market opportunities. Employment of computer and information systems managers is expected to grow between 18 to 26 percent for all occupations through the year 2014<sup>3</sup>.

The education of the workforce in the IT industry ranges from a high school education to some post graduate study and/or specialized certifications. For all IT-related occupations, technical and professional certifications are growing more popular and increasingly important. IT workers must continually update and acquire new skills to remain qualified in this dynamic field. Completion of vocational training also is an asset. Community colleges play a critical role in training new workers and in retraining both veteran workers and workers from other fields. Management and many professional positions require a minimum of a bachelor's degree, and there is growing demand for further education.

In addition to academic and technical skill requirements, many positions, such as computer support specialists, also require strong problem-solving and analytical skills as well as excellent communication skills because troubleshooting and helping others are such vital aspects of the job. And because there is constant interaction on the job with other computer personnel, customers, and employees, computer support specialists must be able to communicate effectively on paper, using e-mail, and in person. They also must possess strong technical writing skills when preparing manuals for employees and customers.

## The Workforce Challenges Facing the Information Technology Industry

During Industry Forums conducted by ETA, employers, industry associations, and others in the information technology industry identified their workforce challenges. The information collected over the course of the High Growth Initiative in information technology provides insight into what industry executives identify as their key workforce development concerns. Below are the four critical areas that were identified.

*Outsourcing:* There is concern about federal, state and local government policy proposals that may restrict overseas outsourcing where labor costs are lower. Some companies move jobs overseas to remain competitive by managing labor costs. Others are opening

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<sup>2</sup> "Industry output and employment projections to 2014" by Jay M. Berman, Bureau of Labor Statistics

<sup>3</sup> *Career Guide to Industries 2006-07*

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new markets overseas for their products and hiring local employees as an incentive and an accommodation.

*Government resources:* Some stakeholders believe that the government can offer tax relief to small businesses for training their incumbent workers toward IT certification.

*Role of government in industry's workforce initiatives:* Stakeholders also believe that government could serve as an honest broker for specific issues such as promotion and image, forecasting the future of the workforce and training needs. This could be a task for the public education system, where children could be introduced to the new, dynamic global workplace and learn more about the current business culture.

*Skills and training:* Over 90 percent of IT workers are employed outside the IT industry, which makes it necessary for them to have complementary training in their respective business sectors such as health care, manufacturing or financial services. Employers are also looking for well developed soft skills, transferable IT skills and adaptability in their workforce. Incumbent training programs may help in this respect, as could community colleges.

## ETA Investments in IT Workforce Solutions

In response to the workforce challenges identified by the IT industry, the Department of Labor has announced the award of three investments totaling nearly \$8 million since June 2003.

Computing Technology Industry Association (CompTIA)

*National Information Technology Apprenticeship System (NITAS)*

Grant amount: \$2,818,795

To support the development and implementation of NITAS, a competency-based apprenticeship methodology that supports consistent and flexible credentialing for the career development and advancement of IT workers. The seven-track NITAS career matrix allows workers to progress through all or part of the apprenticeship program using a combination of classroom instruction and on-the-job training. Standardized, industry-recognized certifications are earned as each apprenticeship tier is completed, and the certifications are transferable from employer to employer.

State of Arizona (AZ)

*The Arizona Information Technology Skills Training Initiative*

Grant amount: \$3,403,168.

The State of Arizona will implement a new three-course curriculum in software quality engineering and testing, which has been identified as a skill in critical short supply. This curriculum will include the design and implementation of e-learning modules and other self-paced systems as well as instructor-led learning. Successful completion of the final exam for all three courses earns students an industry-recognized SQE Certification from IBM.

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State of Vermont (VT)

*Vermont Governors IT Training Initiative*

Grant amount: \$1,595,019

Grantee will establish a state-wide information technology training infrastructure through mentored internships, apprenticeships, web-based technology, statewide outreach, and strong partnerships.

### Next Steps

ETA's engagement with the information technology industry has been focused on the continued guidance of the three investments made through the High Growth Job Training Initiative. ETA's ongoing engagement with the information technology industry will require a continued shepherding of this small group of grants toward completion, encouraging sustainability strategies, and seeking new and innovative replication strategies to ensure the broad dissemination of grant products and best practices. Sharing the results and products from these demonstration projects with the public workforce investment system and other partners will support job growth for this key sector of the American economy.

ETA is initiating efforts to link the small information technology community of grantees to the geospatial stakeholders from both the High Growth Job Training Initiative and Community-Based Job Training Grants, due to the commonality found within the end-user communities. The goal of this linkage is to highlight best practices and facilitate cross-project dialogue to encourage knowledge transfer among grantees.

In addition, ETA will pursue opportunities to link existing information technology grantees and grant products to Workforce Innovation in Regional Economic Development (WIRED) regions that are seeking to develop information technology as a strategy for regional economic development<sup>4</sup>.

ETA is working to develop a competency framework for use by industries that rely upon an educated and prepared workforce with skills in science, technology, engineering, and mathematics (STEM). This effort builds on existing standards, curricula, and certifications across multiple disciplines. The end product will be a competency model which is intended to reduce the duplication of effort involved in continually identifying and re-validating core foundational competencies for separate projects and that supports the creation of curriculum and training designed to meet these core competencies.

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<sup>4</sup> For more information on ETA WIRED Grants, go to [www.doleta.gov](http://www.doleta.gov).