GIS Impact: Department of Labor Declares Geospatial Industry High Growth

ESRI ABSTRACT:

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Part of the President's High Growth Job Training Initiative, which is helping workers find and prepare for jobs in America's fastest growing industries is impacting the GIS industry.

The Department of Labor has targeted the fast-growing geospatial industry to make investments in for geospatial technology training to equip workers with the skills necessary to take advantage of the nations top growing industries.

This program allows for the establishment of geospatial business hubs in Charlotte, N.C., and Nashville, Tenn., to provide apprenticeship training in geospatial technology applications. The curriculum delivers training in geospatial-based land management and utilities services in both regions of the country. GIS and ESRI software will be one of the main focuses of the programs.

This paper will focus on how providing more skilled workers in the geospatial field will enable the U.S. workforce to compete in today's global economy and service the GIS industry and its needs.
The President's High Growth Job Training Initiative, as implemented by the U.S. Department of Labor's Employment and Training Administration, is designed to provide national leadership for a demand driven workforce system that ensures no worker is left behind. It is a strategic effort to prepare workers to take advantage of new and increasing job opportunities in high growth, high demand, and economically vital industries and sectors of the American Economy. The initiative is designed to ensure that worker training and career development resources in the public workforce system are targeted to helping obtain jobs and build successful careers in these industries.

The foundation of this initiative is partnerships that include the public workforce system, business and industry, education and training providers, and economic development working collaboratively to develop solutions to the workforce challenges facing these industries and to develop maximum access for American workers to gain the competencies they need to get good jobs within these industries. Industry representatives must define the workforce challenges, e.g., getting career and skill information to young people charting their education and career courses; accessing new labor pools; defining core competencies for success on-the-job; training workers and building the capacity of educational institutions to train workers. Community colleges and other education and training providers assist in developing competency models and curricula to build core competencies, and train workers.

The public workforce system accesses human capital (youth, unemployed and dislocated workers) and places trained workers in a job. To model this approach, the High Growth Job Training Initiative has initially identified twelve-sectors at the national level that: (1) are projected to add substantial numbers of new jobs to the economy; or (2) have a significant impact on the economy overall; or (3) impact growth of other industries, or (4) are being transformed by technology and innovation requiring new skills sets for workers; or (5) are new and emerging businesses that are projected to grow.

**Twelve-Sectors Identified at the National Level as “New and Emerging” or “Substantial Growth”**

- Health Care
- Information Technology
- Biotechnology
- Geospatial Technology
- Automotive
- Retail
- Advanced Manufacturing
- Construction
- Transportation
- Hospitality
- Financial Services
- Energy

The High Growth Job Training Initiative is investing in national models and demonstrations of the workforce solutions in these sectors designed to achieve the following outcomes:

- Targeted investment of workforce development resources and support for private and public sector partnerships to ensure the development of workers' skills in the demand occupations based on industry need.
- Increased integration of community and technical college efforts with business and the public workforce system activities to meet the skills training needs of high growth industries.
• Increased opportunities for employers to use apprenticeship training for skill development methodology, and the combining of on-the-job training and academics, to ensure a pipeline of skilled workers.
• Providing workers with the paths to career enhancing opportunities and high growth occupations.

As we view the geospatial technology industry in light of these desired outcomes, it is easy to see why this was chosen as one of the top twelve sectors. The focus on the geospatial market is driven in a large part due the professions current and projected annual revenues and ever increasing product demand.

• The market for geospatial technologies in 2002 was estimated at $5 billion. This market is projected to have annual revenues of $30 billion by 2005, consisting of $20 billion in the remote sensing market and $10 billion in the geographical information systems (GIS) market. (Annuis, Carr, and Gaudet, “Building the Geospatial Workforce,” Urban and Regional Information Systems Association Special Education Issue, 2002)
• Geospatial products and specialists are expected to play a large role in homeland security activities. Information gathering needs to protect critical infrastructure have resulted in an enormous increase in the demand for such skills and jobs. (Lorraine Castro, NIMA Human Resources Department, 2003)
• Increasing demand for readily available, accurate, complete, and current geographic information and the widespread availability and use of advanced technologies offer great job opportunities for people with many different talents and educational backgrounds. (U.S. Geographical Survey and U.S. Bureau of Labor Statistics)

The major workforce issues impacting the geospatial market include: skills, competencies, training, outreach to the public, retention of current workers, and recruitment of new workers. In order to properly address the skills set issues, the following types of programs must be available:

• College preparatory courses that emphasize the sciences for individuals interested in pursuing careers in photogrammetry, remote sensing, and GIS.
• 2-year academic and technical institutions offering training in photogrammetry, remote sensing, and GIS related fields. Associate degree and certificate programs in GIS, surveying, photogrammetry, and similar curricula providing foundation for work experience or for transfer to other academic institutions for further education. Technician training for those who are not interested in a degree program.
• Internships in photogrammetry, remote sensing, and GIS participate to obtain hands on experience. (The Imaging and Geospatial Society)

In September 2004, U.S. Secretary of Labor Elaine L. Chao announced a series of investments totaling more than $4.9 million to address the workforce needs of the geospatial technology industry. The U.S. Department of Labor (DOL) hosted forums with geospatial technology industry leaders, educators, and the public workforce team. The DOL has sought to understand and implement industry-identified strategies to confront critical workforce shortages. It has listened to employers, industry association representatives, and others associated with the geospatial technology industry regarding some of their efforts to identify challenges and implement effective workforce strategies.

The DOL’s Employment and Training Administration is supporting comprehensive business, education, and workforce development partnerships that have developed innovative approaches that address the workforce needs of businesses, while also helping workers find good jobs with good wages and promising career pathways in the geospatial technology industry. One such program supported by the DOL initiative-
is IGISS. The Institute for GIS Studies (IGISS) is a 501 C (3) nonprofit organization, that provides an educational program with on-the-job training to support the domestic/on-shore labor needs of the geospatial industry. The program provides the necessary geospatial training to a pool of unemployed United States workers that possess the innate ability to understand geospatial information but lack the proper training. The program targets rural communities that are supported by multiple secondary colleges and/or military bases with an economic requirement for increased work option in Charlotte, North Carolina and Nashville, Tennessee. The IGISS program curriculum delivers training in geospatial based land management and utilities. GIS and ESRI software is one of the main focuses of this program which can be replicated nationwide.

This program provides on-the-job training with actual conversion projects that focus on the geospatial industry. The program curriculum uses geospatial specialists that understand the technical aspects, project management, and quality control aspects of any geospatial data conversion program. IGISS is partnering with industry experts to assist them with their conversion efforts with a price point that is comparable to the off shore rates. IGISS is on all of the NSDI (National Spatial Data Infrastructure) framework layers and the FGDC (Federal Geodetic Data Committee) standards for geospatial data. IGISS is delivering its industry partners the highest quality data suitable for inclusion in the National Map and Geospatial One Stop. IGISS is working with one of the leading parcel conversion companies in the country who is working on multiple local county parcel conversion projects. SDS, Inc. has had involvement in approximately 15% of the U.S. based parcel records to date, and is well positioned to offer a steady flow of work for IGISS. IGISS is positioned to fill the labor needs of the geospatial community due to the Department of Labor’s support. One key to the IGISS’ success lies in partnering the potential graduate with apprenticeship opportunities within GIS Industry Companies and assisting them in finding full time employment with a GIS Company.

As identified below, there are six (6) main goals that when completed, will result in a successful industry outreach effort for the students and the GIS Industry.

Goal 1: Identify the GIS Companies that play in the Geospatial vertical markets in the areas of Land Records, Emergency Management, and Utilities.
   a. Segment GIS potential placement opportunities by categorizing government, industries, and educational possibilities.

Goal 2: Educated the GIS Industry Companies through the use of a Competency Model developed by the University of Southern Mississippi. Compare the competencies in the areas of technical, business, analytical, and interpersonal with the GIS Companies' hiring needs.

Goal 3: Determine potential projects that may be used as on-the-job learning situations for GIS-Apprenticeships.
   a. Create a database of projects, their timelines, and the competencies needed for successful completion.
   b. Match project needs to registered workers' competencies.
   c. Place Apprentice in the job.

Goal 4: Determine potential job opportunities for GIS graduates (Level I; 3-6 mo. Certificate, Level II; 2-year program, and Level III; 4-year program)
   a. Create a database of hiring companies, their timelines, and the key competencies-needed for successful job performance.
b. Match job opportunity to trained worker.
c. Place graduate in job.

Goal 5: Develop and implement a feedback/monitoring process to allow for tracking of success rate, need for curriculum adjustments, and on-going industry awareness.
   a. Solicit on-going feedback for what is going well and changes needed to keep the Jobs-Creation Project viewed as essential in the GIS industries future.

Goal 6: Establish an ad-hoc team to heel the GIS Jobs Creation Project at the highest level of excellence with the ability to be replicated in other portions of the United States.

The IGISS program components consist of education and on the job learning at three educational levels.

The three (3) levels consist of:

1. IGISS Certificate Program:
   • Land Records, Utility, Emergency Management
   • 3-6 month Certificate
   • Technician Classification

2. Piedmont Community College, North Carolina:
   • General Land Records, Utility, Emergency Management
   • 2-year curriculum

3. University of Southern Mississippi:
   • General Land Records, Utility, Emergency Management
   • 4-year Program
   • GIS Degree

The graduates of these programs will enter the labor market following their internships and/or job placements in the GIS profession.

In closing, the DOL through their investments in programs such as IGISS are providing workforce solutions based on the geospatial technology industry’s priorities that address issues such as:
   • Expanding the pipeline of youth;
   • Helping alternative labor pools gain industry-defined skills and competencies;
   • Developing alternative training strategies;
   • Developing tools and curricula for enhancing skill sets;
   • Enhancing the capacity of educational institutions;
   • Developing industry-defined career ladders and lattices;
   • Developing strategies to retain and retrain incumbent workers; and
   • Assisting transitioning individuals from declining industries to high growth industries.
There are several other programs which have been funded by the DOL and include the following:

1. Kidz Online (VA, CA)
   The Geo 21 Project

2. Rancho Santiago Community College District (CA, MO)
   A Model for Connecting the Geospatial Technology Industry to Community College Workforce Development

3. The University of Southern Mississippi (MS)
   Geospatial Technology Apprenticeship Program

4. W.F. Goodling Advanced Skills Center (PA)
   Geospatial Imagery Analysis and Practical Applications


Partnering with the Department of Labor is proving to provide the GIS Industry with the impetus it needs to stay on the leading edge of worldwide growth and development opportunities.

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