



December 20, 2005

## Geospatial Technology Contest

The Geospatial Technology industry is an emerging high growth sector of the U.S. economy that is expected to reach more than \$21 billion in revenue over the next few years. Geospatial technologies help us understand where we are spatially on the earth and how relationships between spatial features impact the earth's natural and man-made resources. Geospatial technologies include geographic information systems (**GIS**), remote sensing (**RS**), and global positioning systems (**GPS**) technologies.

GIS is a unique database management system that handles large amounts of spatial and non-spatial information in a digital map format. It allows the user to organize this information and perform various data manipulations, and analyses and displays the spatially referenced information both graphically and numerically.

By using geospatial technology to improve information management, resource managers can make better decisions. Geospatial technology is used by a wide variety of businesses and agencies. It has environmental applications, as well as planning, surveying, homeland security and mapping applications. It also applies to:

Election administration and redistricting	Public health and safety
Infrastructure management	Real estate information
Oil, gas, and mineral exploration	Research and education
	Transportation and logistics

Geospatial technicians are employed by:

Consulting firms	Real estate companies
Government agencies (city, county, state, and federal)	Timber companies
Map and database publishers	Utilities (electric, gas, water, wastewater, and telephone)
Marketing and sales companies	
Oil, gas, and mineral companies	

A graduate with geospatial technology skills can work as a:

Computer cartographer	GIS analyst
Geographic database designer	GIS programmer
Geographic data analyst	GIS technician

SkillsUSA is instituting a college/postsecondary-only contest in Geospatial Technology at the 2006 SkillsUSA Championships in downtown Kansas City, Missouri. College/postsecondary students studying GIS, RS and GPS from across the country will be invited to participate in an online qualifying test offered March through April. The test will be comprised of 150 questions selected by a computer from a test bank of more than 2,000 questions. Seventy-five percent (75%) of the questions will deal with technical knowledge of GIS, RS and GPS with the remaining 25 percent split between employability skills knowledge and general academic skills related to Geospatial Technology.

The fee for taking the online qualifying test will be \$40, payable to SkillsUSA, which will include the '05-'06 SkillsUSA student magazine and other SkillsUSA materials, plus the opportunity to participate in SkillsUSA activities.

Sixty (60) students with the highest scores (ties broken by earliest test date) will be invited to Kansas City to participate in the national Geospatial Technology contest of the SkillsUSA Championships. Contestants invited to Kansas City will be required to pay the SkillsUSA conference registration fee and will be asked to prepare a specified GIS project in advance using a SPACESTARS certification project kit (the \$200 kit cost waived), including a 60-day license of ESRI ArcView software. In Kansas City, the contestants will orally defend that project, as well as take a written technical knowledge test and a hands-on test of Geospatial Technology skills.

Contest orientation followed by a written technical test will begin at 2:00PM on Monday, June 19. On Tuesday morning, from 7:30–noon, 30 students will offer oral defenses and demonstrations of the completed project they brought to the national contest, while the other 30 students participate in a hands-on test of their GIS skills. From 12:30–5:00, the two groups will switch. All contestants will attend the Opening Ceremony Tuesday evening of the National Leadership and Skills Conference, and then attend a debriefing and awards ceremony for the contest on Wednesday morning. Contestants will be free to depart for home after 12 noon on Wednesday, June 21.

Those Kansas City contestants whose aggregate score reaches at least 75 percentile will be awarded STARS certification. STARS (Spatial Technology and Remote Sensing) is a fully-developed “turn-key” certification program for high schools, colleges and universities as well as career professionals looking to integrate geospatial tools into their on-the-job skill set.

The gold medalist will receive a complete ArcGIS ArcView and four Extensions software package worth \$10,000 and a \$1,000 stipend to reimburse travel expenses to Kansas City, as well as registration to attend the ESRI Education User Conference in California. Prizes for the silver and the bronze medalist include the Arc GIS software package, registration to the EdUC, and \$500 and \$250 stipends, respectively. Prizes and awards for other contestants are still in development.

The “GIS Group” that is serving as the technical committee presently consists of

- Berkeley Geo-Research Group (BGRG: Susan Lindell Radke)
- Digital Quest, Inc. (Eddie Hanebuth)
- Environmental Systems Research Institute (ESRI: George Dailey, Charlie Fitzpatrick & Ann Johnson)
- Geospatial Industries Technologies Association (GITA: Robert Samborski)
- The Institute for Advanced Education in Geospatial Sciences (Dr. Pamela B. Lawhead)
- Leica GeoSystems GIS & Mapping, LLC (Matt Falter)
- The Mississippi Enterprise for Technology (B. Greg Hinekebein)

We continue to seek (a) expanded representation on the Geospatial Technology national technical committee, (b) judges, (c) contest equipment, and/or (d) prizes for place winners or for all the contest's Kansas City participants.

# GEOSPATIAL TECHNOLOGY

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## Purpose

To evaluate each contestant's preparation for employment and to recognize outstanding students for excellence and professionalism in the field of geospatial technology

## First, refer to General Regulations.

## Clothing Requirements

*For men:* Official SkillsUSA white polo shirt with black dress slacks, black socks and black leather shoes. *For women:* Official SkillsUSA white polo shirt with black dress slacks or skirt, black socks or black or clear seamless hose and black leather shoes.

## Eligibility

Open to active SKILLSUSA members enrolled in technical programs that include geospatial technology as an occupational objective.

## Equipment and Materials

1. Supplied by the Technical Committee:
  - a. Geospatial project documentation to outline project activities
  - b. Project data
  - c. Metadata pertaining to project data
2. Supplied by the contestant:
  - a. Computer system that meets minimum specifications for operating computer software specified below and includes a CD-ROM drive and 1 GB hard disk storage space, monitor, keyboard and mouse
  - b. Computer software
    1. ArcGIS v. 8.x or 9.x suite
    2. Microsoft Office suite including Microsoft Word, Microsoft Excel and Microsoft PowerPoint
  - c. Misc. supplies (optional)
    1. Ballpoint pens or sharpened pencils
    2. Blank notebook paper

## Scope of the Contest

Contestants will be given a community-based problem to be solved or addressed using industry-standard GIS software tools. Contestants entered in the geospatial technology contest should have instruction in the following areas:

1. Geospatial Project Management.
2. Geospatial technology terminology and concepts
3. Navigation of ArcGIS software suite
4. Displaying vector and raster data
5. Managing & editing data display properties including manipulating map coordinate systems and projections, editing feature symbology, labeling features
6. Communicating GIS project findings through the creation of charts, reports and map layouts with necessary map elements
7. Managing geospatial data including using metadata, joining data tables, editing data tables, calculating fields in tables, exporting data and using techniques to incorporate non-spatial data in a GIS project, displaying data statistics, grouping data, creating new data layers, and adding features to new data layers
8. Performing geospatial analysis including performing attribute- and location-based queries, buffering features, geocoding tabular data, merging data, and clipping data
9. Exporting map layouts as image files

Students will complete a written examination and then complete a community-based project dealing with practical application of geospatial skills. Upon completion of the project, students will summarize project findings into a written report (including map layout images) and a brief presentation slideshow using Microsoft Office tools.

		<b>Points</b>
1. Interpretation of the written geospatial task in an application-specific, community-based project scenario	<ul style="list-style-type: none"> <li>• Concept comprehension</li> <li>• Geospatial project management</li> </ul>	50
2. Displaying geospatial data (image/raster and feature/vector)	<ul style="list-style-type: none"> <li>• Concept comprehension</li> <li>• Software navigation</li> <li>• Data management</li> </ul>	35
3. Effective display of spatial data in maps	<ul style="list-style-type: none"> <li>• Data management</li> </ul>	35
4. Effective use of non-spatial data in maps	<ul style="list-style-type: none"> <li>• Data management</li> <li>• Geospatial analysis</li> </ul>	35
5. Demonstration of editing necessary data tables and features	<ul style="list-style-type: none"> <li>• Data management</li> </ul>	35
6. Application of geospatial analysis techniques to solve community-based issue(s)/scenario(s)	<ul style="list-style-type: none"> <li>• Geospatial analysis</li> </ul>	50
7. Creation of map layouts relevant to community-based issue(s)/scenario(s)	<ul style="list-style-type: none"> <li>• Geospatial analysis</li> <li>• Communications</li> </ul>	50 (10 each)
8. Creation of other elements such as charts and reports necessary for effective communication of project	<ul style="list-style-type: none"> <li>• Geospatial analysis</li> <li>• Communications</li> </ul>	30
9. Comprehension of application of geospatial skills to relevant community problems	<ul style="list-style-type: none"> <li>• Concept comprehension</li> <li>• Geospatial analysis</li> <li>• Communications</li> <li>• Geospatial project management</li> </ul>	50
10. Effectiveness of written report	<ul style="list-style-type: none"> <li>• Concept comprehension</li> <li>• Geospatial project management</li> </ul>	50
11. Effectiveness of presentation slide show	<ul style="list-style-type: none"> <li>• Concept comprehension</li> <li>• Geospatial project management</li> </ul>	50
12. Overall project effectiveness	<ul style="list-style-type: none"> <li>• Concept comprehension</li> <li>• Geospatial project management</li> </ul>	100
13. Written examination		100
<b>Total</b>		<b>670</b>