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A Monthly Newsletter of the National Geospatial Technology Center of Excellence
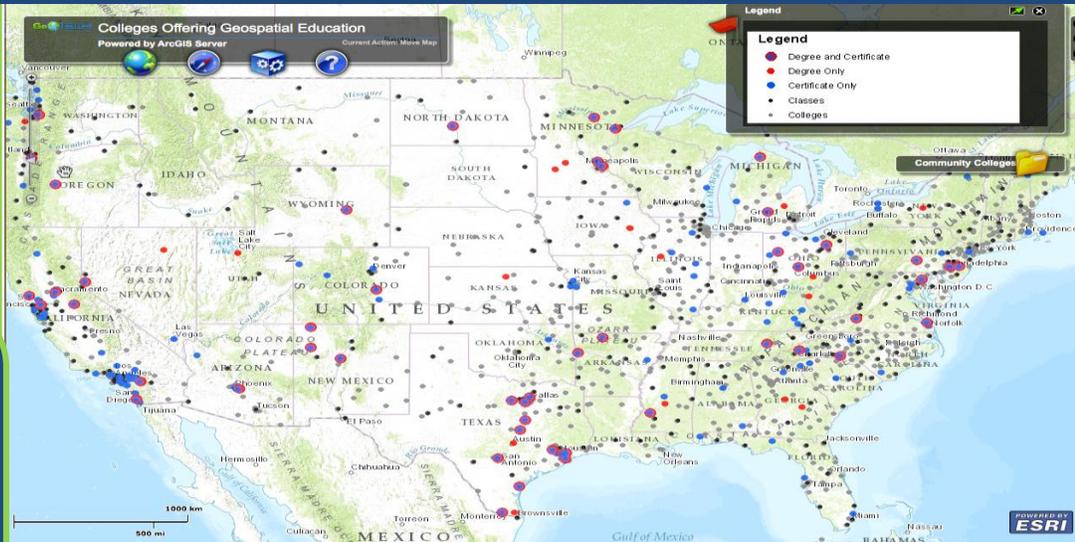
Innovation in Geospatial Science and Technology Education

Empowering Colleges: Expanding the Geospatial Workforce

In this issue:

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The GeoTech Center is virtual, comprised of a Director, four Associate Directors, and nine Assistant Directors from institutions across the nation. The central office is located at Jefferson Community and Technical College in Louisville, KY.

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EUGISES 2014

The Seminar

The European Geographic Information Systems Seminar (EUGISES) included participants from 14 countries mainly from Europe, but also the US and Japan. See http://eugises2014.eugises.eu.

Presentations focused on geospatial education – development of courses and programs, defining competencies and alignment of curriculum to workforce needs, pedagogy and best practices in teaching and issues surrounding student awareness of the technology and career pathways. Earlier EUGISES events provided a perspective on the differences between GIS programs in the US and in Europe or other regions of the world. The major differences were most often from the lack of data available to teach GIS or conduct research using GIS. Data availability and ease of access has greatly improved in the EU and globally and educators are less restricted in what and how they can introduce the technology in their programs. This has lead to a convergence of issues for education in the EU and anywhere where the Internet and web-based data are available.

The two Keynotes were presented on Hot Topics for educators in Europe, but topics were also very relevant to programs in the US and globally: 1) Disruptive Technology and GIS Programs, and (2) The Challenge of Teaching Coding to GI Students (i.e. best practices for teaching programming relevant to GIS).

Rapid Technology Change

Rapid technology change and **expanding user community** has the potential to overwhelm available education options, but current programs still have issues filling courses if they only target students coming from high schools. The current workforce is seeking out educational opportunities, but high schools students are generally not aware of geospatial technology or career pathways for the technology. While more K-12 schools are trying to add GIS awareness, the percent of students coming out of high school knowing about its use are still very low. A recent presentation by Jack Dangermond, CEO of Esri, said that GIS was a "secret weapon" used by business. Same can be said for uses in government – the Bureau of Labor Statistics does not have a "clear occupation listing" for GIS users, but its website makes extensive use of GIS to indicate national labor trends.

Remote Sensing

Remote Sensing is still seen as a "separate" discipline. Many GIS programs do not include it while others have separate departments dealing with it altogether. Increasingly remote sensing is being integrated into GIS programs as a significant source of information beyond providing a basemap. LIDAR is also becoming more important.

EUGISES continued

Remote sensing has slowly become very important as hardware, software and data formats become easier for users to integrate and use. While the use of Unmanned Aerial Vehicles (UAV) was not included in the presentation, discussions during open sessions did include use of and issues surrounding UAV technology and its importance as a new disruptive technology that should be monitored closely as the technology and legal issues are resolved.

GeoTech Center Presentation

Ann Johnson, co-PI and Assistant Director of the GeoTech Center, presented on the Geospatial Technology Competency Model and the GeoTech Center MetaDACUM. Ann gave out copies of the MetaDACUM and explained how the GTCM was updated and the participation in both by the workforce. Our European partners were impressed with the in-depth work that has been done and the connection between the workforce and education. Also many in attendance were interested in ways to review and assess their programs using the assessment tools developed by the GeoTech Center. There are opportunities for us to work with some of the participants on international projects, but it really does show that we have a lot of common needs, issues and trends where we can all learn from each other.

Conclusions

The world of GIS education is converging as technology use is expanding across the globe. As data sharing and standards are created, more collaboration will benefit educators everywhere. There needs to be one "overarching" collaborative organization or communications platform that helps educators teaching geospatial technology at any level, in any discipline and in any country. As it is now, each region (state, federal, international), each level (K-12, college, university or graduate program), and each discipline (geography, computer science, Information Technology, Earth science, etc.) and each type of program (GIS, geospatial, geoinfomatics, remote sensing, etc.) have their own communication network and representative organization. An open dialogue between these different entities would be beneficial, but how this can be achieved is not easy to answer. EUGISES is a good example of how different entities can come together to discuss important topics in education that is not restricted to one perspective. The GeoTech Center is an inclusive organization where "geospatial" is not restricted to one discipline and educators are more open to using multiple terms for the technology. It is still restricted somewhat to "level" with its focus on two-year colleges, but partners from K-12 and universities help to broaden that perspective. While we live in a virtual age with easy access to webinars from all over the globe, attending conferences such as EUGISES where individuals meet face to face with open discussions is invaluable in developing a broad perspective that can provide alternative solutions to problems that geospatial educators face.

Pictometry

Recently, a team from the GeoTech Center spent two days in Rochester, NY visiting Pictometry. Over the past 12 years, Pictometry has been the market leader in aerial oblique image capture in he government space. The company also services the infrastructure and commercial industries. Providing powerful high-resolution aerial imagery and analytical tools for assessment, public safety, emergency response and overall visualization needs, Pictometry continues to offer one-of-a-kind solutions.

In 2010, Pictometry had over 1,000 county customers as well as several federal, state, and commercial customers. Working with industry leaders such as Esri and Microsoft, the company has expanded its coverage, capturing over 30,000,000 images per year in all 50 states, as well as in Canada and internationally. Domestically, Pictometry's imagery covers nearly 90% of the homes in America. Pictometry continues to innovate, working with partners to create new products and services such as some of the most photorealistic 3D models and a ChangeFinder product that can locate and identify the changes in the structures. Along the way, Pictometry has obtained 75 patents covering the innovations and inventions used to create its unique products.
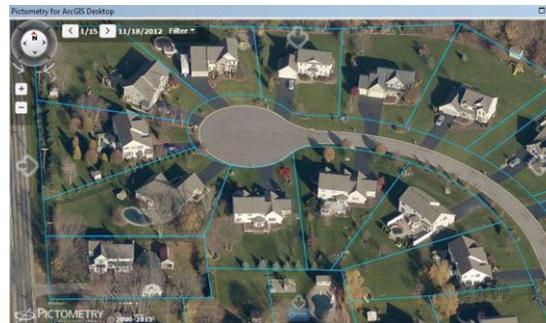
CONNECT

Besides the integrations with ArcGIS, AutoDesk, and Intrado, users have the option of accessing imagery through CONNECT. The CONNECT platform is a secure, web-based solution that combines high-resolution aerial imagery with customer GIS data to create a powerful system that is easily accessible and interactive. Users can upload, view and analyze their location-based data against the backdrop of the highest-quality aerial imagery in the world. Since CONNECT is built on top of the Pictometry platform, this solution goes beyond just visualization and also provides answers.

Educational Partnership

Pictometry's education partnership program provides hands-on learning experiences using the innovative imagery and analytical tools that transformed the mapping profession. GeoTech Center will do trainings in Pictometry. Faculty who attend the training can receive up to 25 seats free of Pictometry Online and for a year for student usage, they will be part of a community of practice so we can share information. After that the educational institution will pay $250 per year for the seats. More information to come.