Moving but not leaving

Josh Greenfeld's GIS campaign set to acquire an international dimension

The Geographic and Land Information Society may be the youngest member organization operating within the American Congress on Surveying and Mapping, but many of its members are veterans of the community of geospatial professionals affiliated with ACSM. Josh Greenfeld, a surveyor with a GIS mission, has been a strong voice for the ACSM community and his organization, GLIS, for decades. This May, after a distinguished career as an educator at the New Jersey Institute of Technology, Greenfeld will return to Israel with his family, but he is not relinquishing the professional ties he has forged within our community. He knows the years spent in the U.S. and the people he has worked with are an indivisible part of his lifelong quest. Excerpts:

ACSM BULLETIN: What motivated you to join ACSM - GLIS and what benefits have you gained as a member?

GREENFELD: One of the most important attributes of a professional person and an educator is that he or she cares about one's profession and about one's students. To care means making the profession the best it can be and helping students to become competent, successful, and proud professionals. To care means becoming involved in one's local and national professions and making a difference by participating in crafting the profession's future.

As a member of ACSM and GLIS, I am able to promote ideas that I believe are important and act on them, not just react to developments that may not be beneficial to our profession. For example, instead of reacting to a perceived encroachment by GPS/GIS mapping into the arena of surveying, a national organization such as ACSM or GLIS can work with other professional organizations to clarify what constitutes surveying and what is "GIS-ing." It is not realistic to think that people could be prevented from using these new mapping technologies, if they so wish. Indeed, a more effective approach is to define professional surveying in the clearest possible terms and educate clients about the profound difference in the accuracy of spatial information acquired through a survey conducted by a professional surveyor and information based on data collected with a PDA under lower accuracy standards. Strong professional organizations can profoundly influence public discussions on this and other issues. A professional organization which does not have the support of its members will have a hard time protecting and promoting the profession in such discussions.

The surveying profession is challenged by developments in engineering, GIS, and other mapping activities. These challenges are similar in almost every state. Because surveyors in the U.S. are normally organized in state societies, each state has to resolve these challenges on its own—which could prove difficult and may not be feasible in the long run. It therefore makes much more sense to have a strong national professional society represent the surveying profession in discussions with other professions that affect policy making. The GPS, GIS, and other mapping professional societies are typically organized as national organizations, and surveyors and land information specialists should make sure that they present a unified front vis-a-vis these other national entities.

Another reason behind my becoming a member of ACSM years back was

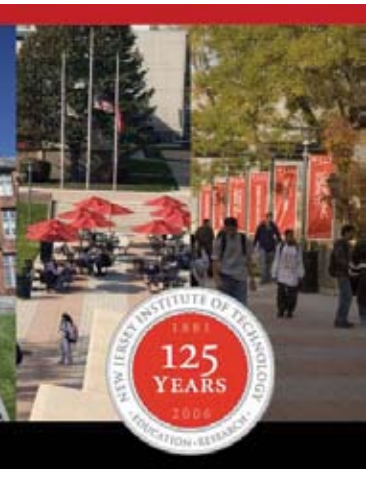
—Photos (from left to right): www.njit.edu; 125.njit.edu; www.gis.fhwa.dot.gov; www.directionsmap.com

the opportunity to present papers at national conferences and learn from other presentations about new developments in my field. My interest has been in the advancement of the science of surveying, although I have also been heavily involved in teaching workshops for continuing education.

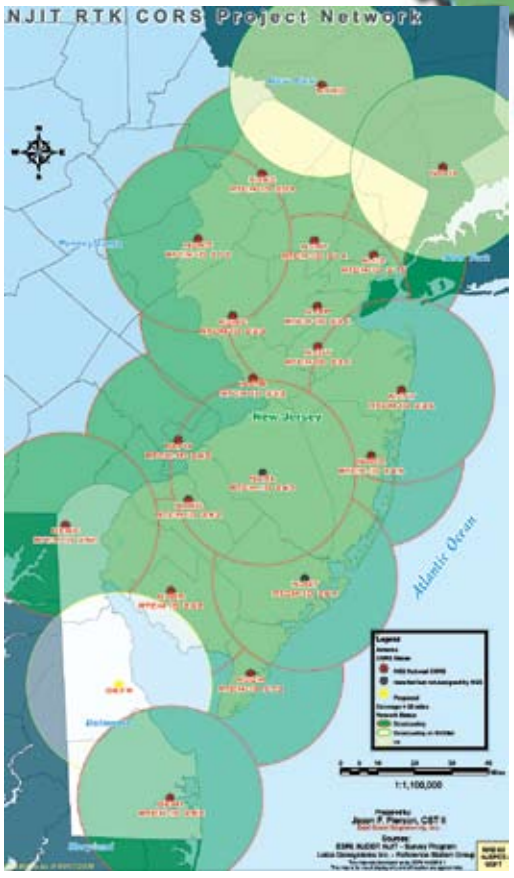
In recent years, the ACSM conferences have been less than successful in attracting scientific technical sessions. These sessions need to be re-instituted if the ACSM annual conference is to become a reputable international conference on surveying, rather than a limited regional conference with PED-driven workshop. This, to me, is another good reason for becoming involved.

ACSM BULLETIN: What drove your research agenda at NJIT to focus on GPS and transportation-related GIS?

GREENFELD: In recent years, GPS, GIS, and image-based sensors have become the supporting technologies of the surveying profession. To be productive a faculty member has to develop a research agenda that leads to funding and publications. Since at NJIT there is no graduate program in surveying and because NJIT has a national transportation center, it seemed to be a natural match for me to become involved in two of the three technologies as they apply to transportation.



There are many transportation problems that require the scientific expertise of surveying. For example, in a hurricane evacuation study when surge elevations have to be matched to road elevations to determine which roads are passable and which ones are inundated. In addition, I found that various State DOTs



research projects required expertise in GPS, GIS, and the science of surveying. I felt that this was a good match for my abilities and my academic requirements.

One of my main accomplishments while at NJIT was to help build the New Jersey CORS and RTK network. Unlike in many other states, New Jersey has no state agency willing to provide the funds needed to establish such a network. NJIT therefore decided to look elsewhere and, eventually, found enthusiastic partners in Leica Geosystems and the New Jersey Society of Professional Land Surveyors for establishing the network. Early this year, the CORS network for New Jersey was finally completed. This accomplishment is largely due to the

contributions from local surveyors who purchased membership in the network, and to the incredible commitment from Leica Geosystems in terms of equipment and software. Without the support of Leica Geosystems, this project would have never become a reality.

ACSM BULLETIN: Would you say that GPS and GIS are symbiotic, and if yes, in which way?

GREENFELD: GPS and GIS are not necessarily symbiotic technologies. They can exist completely independent of each other. In deformation studies or in car navigation, GPS can be used independently of GIS, and GIS for traffic flow studies can be implemented independent of GPS. However, when it comes to surveying, the situation is different. A survey project is normally comprised of research, data collection, analysis, and presentation. GPS has become an effective and economical tool for data collection, and GIS has emerged as the preferred medium for data presentation and project submission. Surveyors should recognize this trend and make sure they are ready for GIS.

Surveyors successfully moved from paper maps to CAD files. Now they are challenged to move from CAD files to GIS submissions. In New Jersey there are municipalities and counties that already require tax maps and subdivision submissions in GIS format. For local and state government, this is a perfect vehicle for building a quality parcel-based GIS—the foundation upon which many local governments function. Developing a high-quality GIS is very expensive, making it necessary for authorities to build it slowly from individual projects submitted mainly by surveyors. Surveyors should rise to this challenge and send a clear message that they are a necessary partner in any such effort.

ACSM BULLETIN: Which issue do you consider to be of paramount importance for surveyors?

GREENFELD: Without going into specifics, I would say that menu-driven surveying equipment and software are poised to impact surveying. I am very concerned about using these devices and running software packages without having a sound theoretical understanding of the theory and science imbedded in them. In the past, licensed surveyors could justly claim to have expertise and

exclusive legal rights to perform certain surveying and mapping activities. They had full knowledge of what they were doing and how exactly it should be done. Some surveyors using the new technologies cannot make such a claim, since they may lack the necessary educational background to understand the fundamentals of the tasks they're performing.

New technologies are based on the principles of geodesy, adjustments with least squares, error theory, signal processing, computer science, cartography, and more. Setting up a GPS receiver, processing the data, and presenting them as a GIS map involves selecting specific parameters out of hundreds of available options. A professional surveyor should be able to explain and justify why the settings he or she selected

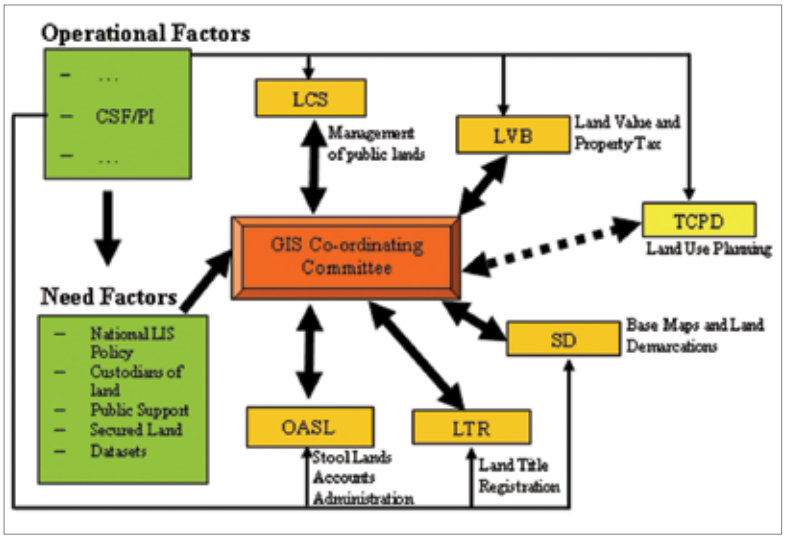
are best for the task at hand.

Surveyors need to make sure that with the advancement of new technologies they maintain the knowledge edge over professionals not licensed to provide surveying services. This is nearly impossible without mandatory college education in surveying. Allowing licensure through apprenticeship only, without college education, could raise qualification issues in claims against engineers and GIS professionals that they cannot practice land surveying. Civil engineers and GIS professionals could challenge the notion that the licensed surveyor has better knowledge of how to perform a survey with the new technologies now on the market.

ACSM BULLETIN: You plan to remain active in the U.S. geospatial community after you move to Israel. Can you give some examples?

GREENFELD: In today's world, physical location and the distances between places are almost irrelevant. Many meetings and practically all correspondence are over the Internet. I plan on becoming more involved internationally and hope to bring international issues and experiences to GLIS and ACSM. I would like to see more events,

—Photos (from left to right page): www.wildlifeservices.co.uk; www.richly.com; www.welcometohosanna.com



such as a 2002 ACSM-FIG-ASPRS conference, held in Washington, D.C. In my opinion, it is very important to bring together U.S. and international professionals and scientists and raise the bar of the profession.

ACSM BULLETIN: So this is an "au revoir" — until next time. Still, is there anything you would like to say to your colleagues, fellow professionals before you fly off to Israel?

GREENFELD: In the past 20 years, I've tried to increase the awareness within and outside our profession of technologies, methodologies, and practices that would impact the surveying profession. One of the positive outcomes of this effort is the successful involvement of New Jersey surveyors with GIS. They work through the GIS committee of the New Jersey Society of Professional Land Surveyors and the New Jersey Geo-spatial Forum (NJGF), and they are part of the NJGF's Council where GIS-related decisions for the State of New Jersey are being made. The voting seat New Jersey surveyors have on the council ensures that they have a say in the decision-making process, not just benefiting from it as participants.

About 6 years ago when I became the president of GLIS, I decided to launch my GIS campaign nationally. I started by performing a study on the state of GIS in state surveying societies around the country. The study focused on finding out what the societies are doing in GIS and at what level are they involved in state activities. I compared these finding with findings published in the annual report of the National State Geographic Information Council (NSGIC). The results were a real eye-opener. One of the interesting findings was that less than one half of the state surveying societies has a GIS committee, and only 14 have reserved a voting seat for surveyors on the state GIS council. This means that in 36 states, GIS decisions and activities are made without the input from state surveyors. My study also found that in most states, surveyors do not have an established mechanism (GIS committee) to monitor and participate in state GIS issues.

My hope was (and still is) to establish a nationwide body of surveyors in which every state will have a representative for GIS matters. This body could be used to draft goals and policies for surveyors' involvements in state GIS councils. Its existence would enable surveyors to become part of the GIS community, and it would also help the GIS community to better understand the contribution of surveying to sound GISs. Perhaps this could become the stimulus package that the surveying profession needs.

GLIS has already taken the necessary steps to initiate the establishment of a GIS coordination body by inviting state surveying societies to nominate their representatives. The idea is to create a body similar to the NSPS Board of Governors. Another model could be the GIS Coordinating body proposed by FIG in 2006 [see diagram on this page; www.fig.net].

I hope that this GLIS undertaking will becomes successful because the future of the surveying profession might depend on it.

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