Demystifying Certification

Certification activities are the inevitable result of rapid industry growth. But what opportunities do certification programs afford and who benefits?

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By: Rebecca Somers
Geospatial Solutions

The GIS certification debate has been going on for several years now but has become more visible in the past year with the rollout of the GIS Certification Institute (GISCI) program. GISCI produced its first group of certified GIS professionals in October 2003 and opened to the public in January 2004.

The GISCI program, however, is not the only GIS certification program or issue. There are actually many elements in GIS professional certification, including GIS certificate programs, specialized GIS certification, and general GIS certification.

These activities and debates are inevitable results of the rapid growth of the spatial information and technology field. As GIS-related activities, systems, data, services, and professional ranks have grown, so have issues and opportunities. These include concerns about competency, pressures to recognize and develop a GIS profession, desires to establish credibility and standing in the GIS field, and, of course, opportunities to meet these needs and profit from them.

What’s Driving Certification?

Advocates believe that GIS certification will protect the public, grow the GIS profession, increase and ensure competency of GIS professionals, instill ethical behavior, and provide assistance to employers.

These goals echo the motivation for professional certification in general. As Phillip Barnhart, author of *The Guide to National Professional Certification Programs*, explains, certification is important because

- Certification measures job-related expertise, and therefore reflects an individual's ability to perform more closely than does a university degree
- Professionals must take responsibility for their career development, and a certification issued by a third party "endorses skills beyond the requirements of a specific position or role"
- The business environment requires constant development and involvement beyond specific job titles, and "certification programs, especially through their recertification requirements, provide guidance to individuals working to stay current in their profession."

What Does Certification Mean?

In discussions in the GIS field, at least, the term "certification" is used broadly but may refer to any or all of a number of activities and programs. Because the types of programs differ and programs differ within type, it can be difficult to determine what "GIS certification" refers to, let alone what it means in terms of indications, assurances, and ultimately, consequences.

A particularly important, yet difficult, issue is the extent to which GIS certification can guarantee the competence of an individual. Barnhart explains: "There are three basic types of certification: portfolio-based, competency-based, and curriculum-based. . . True competency-based programs use examinations, professional education, and experience requirements based on a set of tasks identified through job analysis. To earn certification, candidates must demonstrate their mastery of a common body of knowledge within their profession . . . the critical element of competency-based certification is the examination component."

Ultimately, any certification credential must be evaluated with respect to the purpose for which it is being considered — usually specific jobs and the expertise required to perform them. This in itself raises further issues because developing useful generic job descriptions for GIS has proven difficult.
University Certificate Programs. Many universities, community colleges, and related programs provide educational certificate programs in GIS, granting certificates of accomplishment. Although some programs may focus on specialty areas of GIS, most are general, covering the core or foundation topics in GIS with some electives. But the content and rigor of the programs vary.

Certificates from these programs, therefore, usually mean that individuals have attained a minimum core knowledge set for GIS. Factors in evaluating the usefulness of these certificates include the course content, the required student activities, and how well the curriculum matches the knowledge needed to do the job.

In any event, these programs are curriculum-based certification (in Barnhart's terms) and can ensure competency only to the extent that such programs can. Some believe that accreditation of educational programs should be the focus of quality assurance, but little progress has been made in this area.

Professional Certification Programs. Certification programs evaluate an individual's professional and education background and competency. Currently, there are two prominent programs in GIS.

The American Society for Photogrammetry and Remote Sensing's (ASPRS's) certification program offers certification in six specific areas of spatial information and technology, including Certified Mapping Scientist-GIS/LIS and Certified GIS/LIS Technologist. Notably, the Mapping Scientist-GIS/LIS certification requires expertise in subjects related to mapping science, not just GIS. Applicants must pass a peer review of experience and training and pass the written examination for the specialty area. ASPRS has determined the knowledge and experience required for these job categories and provides a matrix indicating the focus areas of the tests for each of their certification disciplines. This approach can ensure competency as discussed by Barnhart. Because of the rigor of the examination, ASPRS certification is relatively exclusive.

The GISCI certification program certifies individuals in the single category of GIS professional. It is a portfolio-based program that awards points for experience, education, and professional contributions, granting certification if the minimum required number of points is achieved. In effect, the GISCI program defines the job as GIS professional, which is very broad — some say too broad to be meaningful. As a portfolio-based program, the GISCI program cannot ensure competency. It can only attest to the fact that the individual has met the GISCI standards in terms of amounts of experience, education, and professional contributions. In essence, GISCI uses time spent in job activities as a surrogate for competence. GISCI is a relatively inclusive approach to certification.

How Can Certification Be Used?

As the number of people obtaining certificates and certification is growing, it is worthwhile to examine specifically how certification can be useful.

Hiring and Personnel Management. One of the often-stated goals of GIS certification is to assist employers. Presumably, this means helping them in hiring decisions and, perhaps, in other aspects of personnel management, such as staff design and development.

Basing a hiring decision on whether an individual is certified would be unfair because certification is voluntary. However, a certified individual might be given a bonus in their evaluation. And some employers have, in fact, indicated that they would use certification in their hiring decisions. But if an individual is certified, what does it mean?

A curriculum-based certificate from a GIS educational program proves that the applicant accomplished the work required to pass the courses in the program. Whether they can do a specific job depends on how closely the course contents and student activities parallel the job requirements. Test-based certification could provide some useful assurance of competency, as long as the content of the test and review portion of that certification were aligned with the job at hand. Portfolio-based certification indicates that the individual has a certain amount of experience and education, but cannot ensure the quality or competency of the individual's expertise.

Certification appears to be becoming an element in staff design. Some organizations' position descriptions now require that a person be certified initially or within a given time period. Organizations want to be able to assure management, clients, and/or the public that their GIS work or data have a certain level of quality because they are the products of certified GIS professionals.

Curriculum-based GIS certificate programs are being used as tools in staff development. Some organizations require that their staff complete a specific certificate program, and some actually tailor programs to suit their needs.

Requiring certification can also play a role in indicating that the employer values staff development. However, a good employer should also provide more specific direction in terms of the skills employees must develop.

Contracting. As in hiring, the potential exists for using or misusing certification in contracting decisions. And again, because certification is voluntary, unlike licensure, this would appear to be a misuse of it. In fact, requiring certification in a procurement process would most likely be considered restraint of trade.
Still, certification might be considered as a discriminator or a bonus in contracting decisions, and the private sector's initial interest in certification would seem to indicate that they think it could provide an advantage. In contracting, though, when there is a specific job to be done rather than a position to be held, careful examination of the proposal's qualifications with regard to that job is far more important than a general certification they may hold. Specific certifications related to the job may be more relevant.

**Career Development.** Much of the pressure for certification comes from individuals who think it will be a useful credential in building their careers and establishing credibility. Some believe that GIS professionals will be paid more once the profession is "recognized." And, as noted by Barnhart, certification may be a useful credential in endorsing the individual's expertise and credentials.

Certainly, completing a certificate program can provide an individual with the supplemental education in GIS that they may need to enter the GIS field or to use geospatial information and technology within their own field. The GISCI certification attests to the amount of GIS involvement they have had: although, it does not indicate specialization. And a test-based certification indicates whether an individual has the required skill in a particular area of GIS. But does a certification credential in itself provide any benefits?

Obtaining certification does indicate that the individual is taking independent responsibility for their career development (unless, of course, the certification was required by the employer). As Michael Schrage, a columnist for CIO Magazine, noted, "The real value of credentials and certifications ... is not that they indicate greater skill, but they signal to the market that these individuals and organizations will jump through hoops to demonstrate how much they care about being seen as top notch."

Some individuals hope that certification will establish their standing in the GIS field. This is not possible in any of the scenarios because certification is voluntary. Someone who is certified is not necessarily "better" than someone who is not. And, even though they are not to be divulged, comparing GISCI points is meaningless because individuals need only attain the minimum points required to be certified.

One of the broad goals of certification is to further the development of the GIS field. Does this mean that certification elements — curriculum, test-based, or portfolio requirements — can be used for individual career guidance? Again, for someone beginning their work in GIS, the curriculum or certification program elements may provide some guidance as to the minimum general knowledge set and amount of GIS involvement required to be effective in a GIS position. But beyond these minimum-knowledge indicators, none of the programs provide guidance for actual career development.

**Assurances and Shortcuts.** A major motivation in GIS certification is the hope that it can provide assurances of competency and shortcuts in some decision processes. And many of the concerns about the usefulness, impacts, and advisability of certification are rooted in these possibilities.

Concerns about the usefulness of professional certification are certainly not limited to GIS. In discussing how "CIOs increasingly look to certification and accreditation standards as 'market signals' indicative of professional quality and reliability," Schrage explained, "this represents the laziest and most dangerous kind of cover-your-ass thinking by C-level executives." And, to further clarify his point: "The truth — as we all so bitterly know — is that the IT world is filled with certified, credentialed, and accredited idiots."

**What Will the Impact Be?**

Although it's too early to be certain about the impacts of certification, plenty of discussion and debate has ensued concerning predictions. It is useful to look at these potential impacts in terms of certification's goals.

**Growth of the Profession.** Certification may help by providing general guidance on minimum knowledge and expertise requirements. Again, these are minimum requirements, and many argue that this does not build the profession, but rather constrains it. Furthermore, certification is becoming a divisive issue within the spatial information and technology field.

**Recognition.** Certification does provide some visibility, and therefore, recognition of individuals as GIS professionals, as well as of the GIS field itself. But again, this may backfire. Many argue that defining the field limits it. Some, such as the Cartography and Geographic Information Society and Peter Batty, CTO of Ten Sails, argue that the geospatial information and technology field is very broad and is continuing to diversify rapidly. And many see GIS as a tool, not a profession.

**Aid to Employers.** Certification does not really provide much useful information beyond what could be learned from exploring the items on a résumé. Test-based certification can ensure knowledge in specific areas, completion of a certification program indicates the attainment of a minimal knowledge base, and portfolio-based certification only confirms quantity of GIS credentials. So reliance on certification — depending on the type of certification and the specific job situation — could be misleading. In that way, certification could instill a false sense of security, ultimately harming employers who use it too freely.

**Assurance of Ethical Behavior.** The establishment and recognition of codes of ethics is the one element of certification that most people do seem to agree is good. But one ethics concern that draws questions is the ethics of certification itself. Is it beneficial or is it opportunistic and harmful? And who certifies the certifiers?
**Assurance of Competency.** Only certain types of certification can ensure competency, and then only in the areas they address.

**Public Protection.** Again, if competency cannot be ensured, then does certification really provide public protection?

Will certification “improve” the GIS field and benefit those who are in it and those affected by it? At this time, it does not appear that certification goes very far in this regard. Yet, the establishment of certification was inevitable, and perhaps the greatest value of certification programs is the requirement for continuing professional development and recertification. So if these initial attempts are viewed as first steps, building blocks, or experiments, they may provide some value in developing future directions.

Specialized certification activities may prove more useful than broad ones. Broad GIS professional certification may be the most inclusive, easiest, and most marketable, but it is open to criticism for being too broad to be meaningful and — because it is necessarily portfolio-based — not rigorous enough. Narrower, specific, or specialization-based certification may be most appropriate to the evolving GIS field, offering the most credibility by being granted by organizations recognized in relevant specialties and being better suited to testing. Curriculum-related activities such as accreditation and program selection may also be most meaningful when aimed at specific aspects of GIS.

Certification activities will no doubt continue to grow. In fact, as we went to press, the U.S. Geospatial Intelligence Foundation (USGIF) announced its plan to form a Geospatial Intelligence Academy, whose mission will be to expand the workforce of highly qualified geospatial intelligence professionals. In consultation with the National Geospatial-Intelligence Agency and the University Consortium for Geographic Information Science, USGIF will develop and promote university curriculum guidelines and establish a voluntary accreditation process.

Ultimately, the value of a certification program is based on its recognition and acceptance by the field in which it operates — the associations, professionals, and organizations. As there is no single professional association that represents and is recognized as representing the entire GIS field, this also remains to be seen.

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