

**1. Is there really a problem? Has bad GIS data or products been delivered?  
Would professionals that produce bad data be certified?**

Yes, there is a problem. As GIS technology and tools become easier to use more and more individuals are providing GIS services and producing GIS products. In addition, organizations with little understanding of GIS technology are requesting GIS products without totally understanding what they are getting.

The following is a typical example from an Oregon County. Due to the results of the 2000 census one of our tax districts modified their boundary. The tax district used a "GIS Consultant" to develop new boundaries for zones within their district. The consultant utilized a popular redistricting tool and US Census data. The results were delivered to the tax district who then passed this information on to the county to use in an upcoming election. Unfortunately, two problems existed with the product provided. The boundaries did not match boundaries used by the county to manage district boundaries and, more importantly, many of the boundaries could not be used to write a legal description. Legal descriptions typically cannot use the word "UnNamed Stream" as part of the description. This problem caused much confusion, wasted time and dollars, and had the potential to harm the voters in the district in question as well.

If the professional who produced this information had been certified, these issues likely would not have arisen. The plan states that data produced for the public or other organizations should be done by or under the supervision of a certified individual.

**2. Will certification fix the problem of bad data and/or products?**

Certification will not fix all problems with bad data and/or products, but it will help in at least two ways.

First, organizations that have little experience with GIS technology will have a simple way to evaluate whether an individual or organization providing services or products has the experience to do so.

Second, when poor services or products are delivered the code of ethics provides a mechanism to address this problem.

### **3. Shouldn't professionals review data or products that are delivered as part of doing normal business? Why does certification fix this?**

Yes, organizations that receive data should review it prior to use. However, not all organizations, including the public, have the technical knowledge or experience to review the data.

Certification will not fix all problems but does provide a mechanism and a standard code of ethics that can be used to address these problems.

The real issue lies in who will actually benefit from GIS certification. Clearly, the answer is the public. Given that the public sector is one of the largest (if not the largest) employment sector using GIS technology today, the nation's taxpayers deserve assurance that competent and ethical GIS professionals are being hired with their tax dollars. Certification is one of the means that governments (and other employers) can utilize to identify the most qualified individuals for GIS positions.

In addition, citizens are possibly the largest group of people that can be affected by the use of GIS in the course of government operations. It is therefore expected that GIS certification can assure the appropriate application of GIS technology to improve their quality of life.

Finally, young people can be made aware of the GIS career and what it takes to become a GIS professional through the formal definition of the profession that certification provides. Existing and aspiring GIS professionals will also benefit from GIS professional certification because it can be a means to document their expertise and thus set themselves apart from other potential candidates for the GIS position or salary level they seek.

### **4. It appears that becoming certified is too easy. Shouldn't this be harder?**

The certification process the committee has selected is based on much research and time invested by URISA. The certification plan does have a feedback process that allows OGIC to re-examine certification after initial implementation. If the mechanism is too easy or too difficult it can be adjusted.

In reality, the certification process is not easy. In order to qualify for review, a GIS professional will have to demonstrate through detailed documentation that they have competency in three categories: education, experience, and contribution to the profession. The proposed certification requires a Bachelor's Degree and additional course work in geo-spatial technologies plus a number of years of experience. Experience carries the most weight. Though a written examination is not required, certified peers will evaluate the candidate. It requires a higher level of education than other certification programs (ASPRS) or to become a licensed surveyor. The standards to be met are quite high. In a pilot certification process, which used the currently posted

GIS certification points system, only one-third of the applicants who applied had enough points to be certified.

The question shouldn't be whether or not certification is too easy, but rather is it the appropriate foundation for being a geo-spatial professional. Education provides the foundation for professionals to adapt to ever changing technology. A test simply shows that an individual can pass a test.

**5. This seems inconsistent. Many professions that use GIS technology do not have certification and they seem to have professional standards without it. Why does GIS need certification?**

Examining consistency of certification with all other technical professions does exceed the scope of our plan. GIS professionals need to be certified when they produce products or provide services that could potentially harm the public and other organizations. Many other professions that produce products and services have certification or licensing requirements.

Three years ago, URISA created a Certification Committee to explore GIS certification, determine its benefits, identify and review other efforts to evaluate skills of GIS professionals, and propose a certification program that will benefit the profession and society. After many meetings and internet discussions, the committee identified a number of important reasons why GIS certification is needed.

These reasons include:

- To provide a means for attaining recognition by one's colleagues and peers that the GIS professional has demonstrated professional competence and integrity in the field.
- To encourage long-term professional development that will help existing professionals maintain currency in GIS technology and methods.
- To ensure ethical behavior by members of the profession and provide a basis for judging the validity of allegations or complaints against GIS practitioners.
- To assist prospective employers assess and hire GIS professionals.
- To ensure that those who produce geographic information have a core competency in knowledge.
- To define and protect professional bodies of knowledge.
- To assist aspiring GIS professionals choose their educational opportunities wisely.

**6. Developing a system of certification can have unforeseen implications. What are the long-term impacts of the certification and how will it affect union employees?**

Certification does not impact all GIS professionals. It only impacts organizations that produce services and products for others or for the public and should only affect the supervisors in these organizations.

The certification plan does provide for review that will allow OGIC to make adjustments.

**7. Impacts on budgets for staff and contracting services are really not known. How will this help?**

Whenever a new program with new requirements is implemented, it is very difficult to gauge full impacts on budgets. This is one more reason why the plan provides for future review by OGIC members.

Unfortunately, the costs of not having a program are also not known. Organizations seldom document the cost impacts of delivery of sub-standard data or products and often do not document the costs associated with resolving these problems. While certification will not solve all problems, it should reduce these costs.

**8. Will this increase cost for hiring and paying for continuing education?**

Like any profession, compensation for GIS professionals will follow the market for services based on supply and demand. Certification will actually save employers time and money in the hiring process because the pool of qualified applicants for a GIS professional position will be limited based upon whether or not they have certification. Employers will not have to wade through potentially unqualified applicants. In addition, it is recommended that only supervisory staff be certified.

Certified staff should participate in continuing education. Continued education actually reduces operating costs because educated staff should be doing tasks better.

It will take time to see what effect this will have on the salaries of existing GIS professionals. It should be noted, however, that urban and regional planners who became certified have been found to have salaries that are 27.5% higher than planners who are not certified, according to a 1996 survey by the American Planning Association's Planning Advisory Service (See: Morris, Marya. 1996. "1996 Planners Salaries and Employment Trends". Planning Advisory Service Report #464. American Planning Association. Chicago.)

**9. Why should we use the GIS Code of Ethics when we have many other professionals working in our organizations? What makes them special?**

Many professions do have a code of ethics and licensing boards. When the public or other organizations can be harmed, it makes sense to have a set of ethics that are directed at the professionals involved. The GIS professional is not special and must adhere to the ethics and responsibilities as required by many other professional organizations.

This Code of Ethics is intended to provide guidelines for GIS professionals. It should help professionals make appropriate and ethical choices. It should provide a basis for evaluating their work from an ethical point of view. By heeding this Code, GIS professionals will help to preserve and enhance public trust in the discipline.

This Code is based on the ethical principle of always treating others with respect and never merely as a means to an end; i.e., deontology. It requires us to consider the impact of our actions on other persons and to modify our actions to reflect the respect and concern we have for them. It emphasizes our obligations to other persons, to our colleagues and the profession, to our employers, and to society as a whole. Those obligations provide the organizing structure for these guidelines.

The text of this Code draws on the work of many professional societies. It is not surprising that many codes of ethics have a similar structure and provide similar guidelines to their professionals, because they are based upon a similar concept of morality. A few of the guidelines that are unique to the GIS profession include the encouragement to make data and findings widely available, to document data and products, to be actively involved in data retention and security, to show respect for copyright and other intellectual property rights, and to display concern for the sensitive data about individuals discovered through geo-spatial or database manipulations. Longer statements expand upon or provide examples for the GIS profession.

A positive tone is taken throughout the text of the Code. GIS professionals commit themselves to the ethical behavior rather than merely seeking to avoid specific acts. The problems with listing acts to be avoided are: 1) there are usually reasonable exceptions to any avoidance rules and 2) there is implicit approval of any act not on the list. Instead, this Code provides a list of many positive actions. These explicit actions illustrate respect for others and help to strengthen both an understanding of this ethos and a commitment to it.

This Code is not expected to provide guidelines for all situations. Ambiguities will occur and personal judgment will be required. Sometimes a GIS professional becomes stuck in a dilemma where two right actions are in conflict with each other or any course of action violates some aspect of this Code. Help might come from talking with colleagues or reading relevant works such as those listed in the bibliography. Ultimately, a professional must reflect carefully on such situations before making the tough decision.

**10. Certification is not enough. Why don't professionals get licensed and make it real?**

At this particular time it is not apparent that certification is not enough. The certification has adequate reviews built in so that licensing could be explored if needed in the future.

Certification programs and licensing programs are used for different purposes. In general, certification of individuals is a means to establish professional and ethical standards whereas the licensure of professionals is meant to protect the public from any harm that an incompetent professional may cause. In addition, licensure is administered by a governmental body (states, in the case of surveyors) while certification is usually administered by ones professional peers.