

University Consortium for Geographic Information Science Strategic Plan

Executive Statement

In the present century, computer scientists have joined geographers, cartographers, geodesists, surveyors, landscape architects, mathematicians, statisticians, engineers and others in the age-old quest to represent, analyze and understand real world places and processes. Together, we have created revolutionary new capabilities for simulating and investigating landscapes, regions and environments from local to global. Chief among these new technologies are geographic information systems (GIS) that support spatial data acquisition, processing and analysis, but our quest goes far beyond current technology. We seek to extend the geographic representation of three-dimensional space and time, improve the representation of diverse physical and cultural entities, and simulate dynamic earth processes. Ultimately, we hope to create a new scientific milieu in which all disciplines and fields can readily incorporate geographic information, interpret spatial evidence, and employ spatial logic to advance their sciences as well as our own. Simultaneously, we hope to serve society at large by improving access to geographic information, encouraging more and better use of geographic technology, and providing new insights.

Our model is a challenging, complex undertaking that integrates the models and paradigms of many other disciplines while generating new paradigms of our own. Perfecting this model will require greater understanding of places and processes than anyone has today. We seek this understanding just as any other branch of science searches for new knowledge and formulates new theory in its field. We call this field geographic information science (GISci).

Worldwide and touching all sciences, there is a pervasive need for leadership. Geographic technology is changing the way people think and act in fundamental and lasting ways from the highest research endeavors to the routine conduct of government, business and education and to the daily lives of individuals. Yet, the collective resources provided by government, business and academia have failed to keep pace with the growing demand for research, education, training, access and equipment. The United States is the world's leading exporter of geographic technology in a global market constrained by shortages of qualified researchers, teachers, analysts and software engineers. To date, the greatest market for this technology has been government itself. Clearly, all sectors would benefit from improved resources and policies.

The University Consortium for Geographic Information Science (UCGIS) exists to serve a multitude of needs. First and foremost is the need to unify the GISci research and education communities and to speak with a strong voice on matters affecting resources and policies. Already, we have formulated research and education priorities, disseminated white papers on each, and promoted them to Congress and federal agencies. We assess progress in relation to major federal programs and national interests.

UCGIS serves as the principal advocate for the GISci research and teaching community. This strategic plan assesses our strengths, summarizes our needs, states our objectives, and proposes actions.

1.0 Introduction

The Consortium was organized in 1994. Prior to and during its formation, extensive discussions and debate occurred about its purpose and membership. Founding delegates reached

consensus on a definition of interest missions and goals that are incorporated in the bylaws. These define our niche in an exciting and dynamic field, where many academic, government, private, and non-profit players are active. The Consortium has enjoyed considerable early success, with 75 member institutions, six exciting summer assemblies that produced priorities for research and for education, and ongoing research collaborations with federal agencies. UCGIS has developed a secure but modest financial base.

The Bylaws give much of the responsibility for direction setting to the Council of Delegates from the member institutions. The Council comprises a body of 100 individuals from many disciplines impacted by the rapidly evolving field of geographic information science. To assure continued success, a consensus among the delegates must exist, and evolve, as to what the organization should become. Given the broad and deep expertise of the many researchers involved, many alternatives are possible. The need exists for consensus on strategic direction and for incorporating that consensus into a plan. The Council has the responsibility to accomplish both. We separate strategic planning from operational planning. These two activities are distinct. Strategic planning requires visionary and directional thinking. Operational planning requires short-term, specific thinking and responds to periodically reviewed goals (cited from The Executive Guide to Strategic Planning, p. 2). The strategic plan sets the context for annual operational plans.

The Strategic Plan will operate on an annual cycle occurring within the context of the Council's two major meetings, the Summer Assembly and the Winter Council Meeting. Each year an annual operational plan will be developed to adopt objectives, and allocate resources and responsibilities for achieving strategic goals. That plan will be approved at the Winter Council Meeting, along with an annual budget that serves as a financial expression of that plan. The Strategic Plan review and update will occur at the Summer Assembly. The President-Elect leads that activity. The operational cycle ends at the next Winter Meeting, with an annual report summarizing success of items in the annual plan. Adoption of a new Annual Plan will be based on a revised Strategic Plan.

2.0 Mission and Goals

The mission of the University Consortium for Geographic Information Science (UCGIS) is:

- to unify the geographic information science research community;
- to serve as an advocate and voice for the geographic information science community;
- to foster multidisciplinary research and education in geographic information science; and
- to promote the informed and responsible use of geographic information systems and geographic analysis for the benefit of society.

UCGIS is formed exclusively for educational, scientific, research and other similar nonprofit purposes. UCGIS remains dedicated to the development and use of theories, methods, technology, and data for understanding geographic processes, relationships and patterns. We view the transformation of geographic data into useful information as central to geographic information science. Our activities are intended to unify the geographic information science research community, to foster multidisciplinary research and education, and to promote the informed and responsible use of geographic information.

The goals of UCGIS are:

- to advance theories and methods in geographic information science
- to assess the current and potential contributions of GIS to national scientific and public policy issues
- to expand and strengthen geographic information science education at all levels
- to promote the ethical use of and access to geographic information
- to foster collaborative interdisciplinary research in geographic information science
- to support such national needs as: advancing the nation's geographic information infrastructure; addressing global environmental quality and change; improving international economic competitiveness; increasing efficiency, effectiveness, and equity in all levels of government; advancing democratic participation; and maintaining world leadership in basic science, mathematics, and engineering.

3.0 Strategic Analysis

The goal of creating this strategic plan is to encourage scientific activities in a professional forum where educators and academic researchers interested in mapping systems and GIS, equipment, software, products, services, and applications can share experiences, insights, and information. To that end, a strategic analysis of three areas of activities is outlined to identify strengths, critical issues, objectives and action items. The three areas include membership, functions and services, and external relations. Following this strategic analysis, long term objectives are reviewed, to outline a program integrating the identified action items.

Membership. UCGIS membership currently includes an excellent representation of high quality research universities and most of the prominent GISci programs in the nation. This representation is a strength in providing a credible external image for promoting organization goals and for attracting new members. New applications have been submitted every year. Our strength lies in the potential for sustained growth.

The strategic activities should address the following membership objectives:

- maintain strong representation by leading institutions involved in GISci research and graduate education.
- diversify and expand UCGIS expertise in cognate fields, such as remote sensing, computer science, cognitive science, and applications (for example, transportation).
- target recruitment from non-academic institutions.

In terms of membership strategic planning, the following needs are seen as critical:

- the need to broaden and diversify membership to represent interests in all areas of physical and social sciences, and engineering
- the need to increase membership from institutions, such as national labs and research centers, professional organizations, private firms, foreign affiliates and government
- the need to attract member applications from fields where GIS is emerging, such as transportation and medical fields
- the need to broaden membership in GIS-cognate fields, such as remote sensing, GPS, photogrammetry, and cartography

- the need to attract representation from the institutions whose primary focus is undergraduate GIS education
- the need (within the current membership) to address policies for multiple categories of membership, services, privileges and dues structures

Functions and Services. Three types of functions and services can be identified. In terms of benefits to members, UCGIS provides a leadership role in setting national agendas for research and education. Moreover, UCGIS members participate actively in prioritizing these agendas, and in this sense, it is the members themselves who provide national leadership. A second strength with benefits to UCGIS members is organizational stability and cohesion. Through the mechanisms of Annual Assemblies and Council Meetings, members decide upon and approve the organizational mission, the strategic plan, and other special activities. A third benefit to members is provided in the delivery of instructional materials, as for example with the UCGIS Virtual Seminar held in the Spring 1997 and Fall 2003.

A second type of UCGIS service benefits the GIS community at large. This is the provision of research and educational agendas developed to date. These are made available on the Internet, published in professional journals, and presented at national conferences, such as GIS/LIS, AAG, and ACSM national meetings. UCGIS maximizes news dissemination and professional communications using a variety of media conduits. The UCGIS web site distributes news and perspectives throughout the GIS community. Members and non-members present position papers on education and training innovations, newly designed curricula, and research projects at the Annual Assemblies, and these are disseminated in Proceedings.

The following existing functions and service issues are seen as critical to maintain and augment:

- setting and promoting national research and educational agendas
- expanding and broadening recognition for UCGIS activities and members
- serving as a connection to other communities
- enhancing Internet capabilities, functions and services
- monitoring GIS funding activities in major federal agencies
- maintaining and promoting the UCGIS basic and applied research priorities
- communicating benefits of membership to member institutions
- promoting the ethical use of geographic technologies
- increasing opportunities for funded and collaborative research
- monitor and report funding for collaborative research opportunities
- improving information transfer and professional communications
- keeping abreast of changes in the educational system
- improving networking between UCGIS members

UCGIS is recognized by the national and international GIS community. The organization's Web site is acknowledged nationally and internationally as a credible source of information. Prospective graduate students around the world regularly contact member universities through the Web site for information on degree programs. As a principal advocate for advancing the National Spatial Data Infrastructure (NSDI) for the national GIS research and educational communities, UCGIS has gained a recognizable stature within academic and business communities, and with government at all levels. For example, UCGIS signed a Memorandum of Understanding (MOU) with the National State Geographic Information Council (NSGIC). UCGIS has secured funding for members to collaborate on NSDI with the Federal

Geographic Data Committee (FGDC). These demonstrate the level of outside recognition, and also demonstrate the organization's ability to undertake strategic research.

In terms of membership strategic planning, the critical issue is to facilitate and expand external relations with appropriate organizations. The strategic activities objectives relate to:

- expand opportunities for networking by improving linkages matching GISci with funding opportunities
- develop liaisons and working relations with professional organizations and agencies
- monitor and participate in activities related to certification, accreditation and licensing relevant to GISci
- developing relations with Congress and with the Executive Office
- continue to pursue MOUs with NGOs, science and professional organizations, nationally and abroad.
- develop relations with science organizations, government organizations, and private organizations.
- prepare or respond to statements on certification, accreditation, and licensing as appropriate.

4.0 Strategies

Strategies should include an integrated program to meet the continuing needs of our members. The following services are provided:

- **Agenda-setting:** prioritize a national agenda for research and education at its Annual Assembly. Agenda topics are decided by the membership at Council meetings.
- **Information transfer:** support electronic mechanisms for disseminating information about UCGIS programs, through (for example) Web sites, electronic publication outlets, list servers, and other means.
- **Outreach:** promote UCGIS visibility on member campuses and in the larger geographic information science community, through collaborative teaching and research, in presentations at national and international conferences, and by briefings to agencies and legislators involved in geographic information production and use.
- **Advocacy:** promote the importance of GISci and increase the national interest in research and education for Geographic Information Science nationally. Advocate diversity in the GIS community as a whole, and encourage a responsive attitude to training handicapped and special needs individuals.

To integrate the UCGIS Program, Committee Chairs should draft a timetable for action items prior to the end of each Calendar Year. To maintain currency and keep abreast of UCGIS member institutions' changing needs in the longer term, the Strategic Plan should be reviewed and updated regularly, on a one-year cycle.