

A Proposal to Enhance Research and Instruction in Geographic Information Science (Geoinformatics) at LSU

In response to the Governor's Information Technology Initiative, the Geographic Information Science (GIscience) faculty of the Department of Geography and Anthropology would like to submit the following request. The request consists of two components: infrastructure to meet growing needs and to fill existing gaps, and new faculty and curriculum development. GIscience, which is now also referred to as Geoinformatics, broadly includes remote sensing, geographic information systems and science, computer cartography, global positioning systems, and spatial and environmental analysis. As one of the five targeted research areas under the IT initiative, we believe the request to enhance GIscience will directly contribute to the ultimate goal of increasing economic growth of the State of Louisiana through the development of vital knowledge and technologies and a highly trained workforce in geospatial science and technology.

The request:

Year 1:

1. An upgrade from a graduate assistant position to a full-time computer system administrator position in the Department of Geography and Anthropology. (~\$60K)
2. A large classroom and classroom facilities in the Howe-Russell Geoscience Complex to accommodate 40 computers for undergraduate teaching of GIscience and other IT-intensive classes. With the impending move of the School of the Coast and Environment to a new building, space in Howe-Russell Building could be released to develop a centrally-located computer classroom. (~\$100K)
3. Two faculty positions in GIscience, one specializing in biology, biogeography, and/or ecological modeling, and the other specializing in disaster, decision risk management science, and/or extreme events. One of the positions will be a senior position. Along with this request are two graduate students, start-up support, and an increase in existing faculty salaries to the national level for retention. (~\$350K)

Year 2 & Year 3:

1. Two more faculty positions in GIscience, one specializing in environmental modeling and analysis, and the other focusing on Internet GIS, online collaboratory, and interactive mapping. One of the positions will be a senior position. Along with this request are two graduate students and start-up support (~\$350K)
2. A new research laboratory tentatively called "spatial analysis laboratory" in Howe-Russell Complex to provide research support for faculty and students working on technology projects. (~50K)

** Please note that the Geography program was targeted for enhancement. Also under the Memorandum of Agreement with the University made in 1999 after the program review, an additional faculty in GIscience is projected for hire in Fall 2003. Together with the existing faculty in GIscience in geography and across campus, the request for the four new faculty positions plus a projected hire easily will form a cluster whereby research and instruction in this field can be significantly broadened and deepened.

Rationale for the request:

1. The Department of Geography and Anthropology has been the prime academic program at LSU to offer a suite of technology-oriented classes in GIscience for undergraduates and graduates since the early 1970s. These are important IT classes that have prepared and will continue to prepare the students in the job markets. Many of our former students are now part of the IT workforce in governmental agencies, private companies, and academia.
2. In 1988, the Department established a specialization in GIscience in the geography doctoral and master degree programs, and GIscience classes also became a requirement for our bachelor's degrees. The number of technology classes as well as the number of students enrolled in these classes

continues to grow. Since 1997, two new GIScience faculty members joined the department, and the number of GIScience classes offered by the department requiring extensive computer laboratory exercises is close to 10 per semester. The demand for technical support and a bigger classroom equipped with up-to-date computing facilities far exceeds our current capabilities.

3. Currently, the IT support for the Department's laboratories for teaching and research is maintained by graduate assistants and individual faculty supervision. Graduation and finite funding terms result in the continual turnover of this support. The quality of graduate assistants in IT support also fluctuates, and this has impacted the quality of our class offerings and increased individual faculty time for extra and continuous supervision. Adequate IT technical support is an integral factor for attracting and retaining high-quality faculty.
4. Our GIScience classes have been popular across the campus, and are required by several curriculums other than geography (e.g. Forestry, Environmental Science, and potentially the new Disaster Science Management Program). About 80% of the students enrolled in the GIScience classes are from disciplines other than geography. They are from disciplines such as History, English, Political Science, Sociology, Environmental Science, Engineering, Agronomy, Biology, Geology, Management Science, and Veterinary Medicine. Also, from time to time we have students from state agencies and nearby institutions such as University of New Orleans, LSU-Medical Center, and the Army Corps of Engineers. The demand for enrolling in our GIScience classes from outside the discipline is increasing, and to meet this demand, more classroom space, equipment, and IT technical support is needed.
5. In addition to the GIScience classes, other geography classes have increased computer use. This is undoubtedly the trend and it will continue as we strive to increase our competitiveness in education and research. IT support in terms of a full-time system administrator and more classroom space is essential to meet this demand.
6. A large IT-transformed classroom housed in the Howe/Russell Geoscience Complex is critical to enable closer interactions among faculty, undergraduate students, and graduate assistants. The location is central and accessible by students from all parts of the campus, and the IT support person will provide system management to the large classrooms as well as existing laboratories in the Department, thus increase efficiency in management, research, and teaching.
7. The GIScience faculty and program has a long history of collaboration with disciplines across campus and with federal, state, and local agencies. The four faculty positions requested represent cutting-edge research areas that are important to Louisiana's economy and environment. They also complement and add significantly to existing expertise. Faculty from other departments have expressed their interest in collaborating with an expanded GIScience program. For example, the biology/GIS position will be of interest to Biology and intersects with biological computing, the disaster/GIS position will be beneficial to the proposed curriculum on disaster science and the Academy of Counter-Terrorist Education, the environment/GIS position will add to the environmental research emphasis at LSU, and the Internet GIS position intersects with the wireless technology and virtual organization research emphases. Letters of support from the different collaborating bodies have been attached to this proposal. More letters of support can be secured if needed.
8. This request is an enhancement of an established program that needs to be expanded to meet the enormous increase in demand for expertise in GIS, remote sensing, and spatial analytical skills that is occurring in practically every federal, state, and local agency and medium to large business organizations. Students graduated from our program have placed themselves well in the job markets. These are exploding fields, and we need to seize the opportunity so that we can fully utilize our potential to impact economic growth through technology and workforce development. Moreover, investment in an established program is likely to be more effective because of its economies of scale and its ability to lead to results in a short period of time.

Expected impacts of the request:

The request is consistent with our long-term goals of providing a superb IT-intensive curriculum and a support environment for research and grant seeking activities. We have been successful throughout the years in training students and acquiring external funding for research and instruction, including acquiring computing equipment for all the teaching and research laboratories and for supporting students to maintain the equipment. However, university support is needed to meet the increasing demand and to respond to the rapid change of technology, so that we can provide research and teaching to generate discoveries and technologies and to develop a highly trained workforce.

Specifically, the request will enable the following:

1. The development of a collaborative "certificate" in GIScience or geoinformatics between departments that have shown interests such as medical, forestry, agronomy, engineering, and business. The curriculum will be IT-intensive and will aim at preparing students for the job markets.
2. The proposal of a 2000-level GIScience course for undergraduates to facilitate their exposure to technology at an earlier stage. Additional classes will be offered with the new hires.
3. Adequate maintenance of the teaching and research laboratories and the provision of technical support for new and existing faculty, which is an important factor for attracting and retaining high-quality faculty and students.
4. Increase in interdisciplinary research that will help in knowledge discovery and knowledge dissemination.
5. Increase in sponsored research that has direct impact on the economy and will attract high-quality students.
6. The addition of an IT component for non-GIScience classes.

Brief sketch of existing faculty research and class offerings:

Currently, 12 different courses are offered by the GIScience curriculum (not including thesis and dissertation research). Professor Nina Lam is currently working on a project funded by NASA to examine the use of geospatial techniques such as fractals as data mining tools for detecting global change using remote sensing imagery. She has worked on topics on environmental health such as AIDS, cancers, and hazardous waste sites in Louisiana. Professor Michael Leitner is an expert in cartographic visualization and expert systems. He has examined the geography of crime and is currently applying spatial analytical techniques for geo-marketing. Professor Andrew Curtis's expertise lies in spatial analysis and medical geography. He is currently the GIS and Spatial Analyst for the CityMatCH Team of Baton Rouge - a CDC- and MCH-funded gathering of organizations dedicated to reducing infant mortality in Baton Rouge, Louisiana. Professor DeWitt Braud's research has been funded by various state and federal agencies. His current research involves analysis of satellite imagery to investigate the brown marsh phenomenon, imagery fusion and mosaics, and spatial data development. Professor Anthony Lewis is an expert in geoscience applications of airborne and spacecraft radar imagery. He is currently working on several EPA funded projects using multi-temporal analysis of Landsat TM data to increase the accuracy of land use mapping.

Submitted by: Nina Lam, Michael Leitner, Andrew Curtis, DeWitt Braud, Anthony Lewis

Signatures: *Nina Lam* / *Michael Leitner* / *Andrew Curtis* / *DeWitt Braud* / *Anthony Lewis* Date: 09/24/01

Department Chair: Craig Colten

Signature: *[Signature]*

Attachments: Support Letters

Havana City, September, 24th, 2001


The Department of Epidemiology at the Tropical Medicine Institute "Pedro Kouri" contacted the Department of Geography and Anthropology of the Louisiana State University through Professor Andrew Curtis, who has collaborated with us sending bibliography and methodological orientation about the application of Geographic Information Systems (GIS) in Public Health.

We strongly support the creation of a center at the Department of Geography and Anthropology of this University for investigation and teaching of GIS, because it is an emerging field for many different sectors of the science.

This proposal will transform it into center of reference with regional and international character contributing to the formation and qualification of specialists in GIS. It will contribute to elevate the scientific potential of other investigation centers giving training in GIS to researchers of diverse disciplines, as well as they will be able to settle down projects of combined collaboration with other institutions in the world.

We hope their collaboration with our institution in different research projects that we are carrying. Also, training and consultantship in the use of the GIS in the spatial analysis of the geographical factors related to the incidence of different diseases in our country.

Sincerely your,


Lic. Ivette Molina Serpa
Department of Epidemiology
Institute of Tropical Medicine "Pedro Kouri"



September 20, 2001

Department of Geography and Anthropology
Louisiana State University

Dear Sirs:

I am delighted to hear about the possibility that Louisiana State University (LSU) has the opportunity to improve the (Geographic Information Systems) GIS and spatial analysis capabilities of the Department of Geography and Anthropology. This proposal has my complete support. The Department has two nationally recognized GIS scientists in Dr. Nina Lam and Dr. Andrew Curtis, with whom I have had the distinct pleasure to work professionally. As the Department of Health and Human Services representative to our nation's Federal Geographic Data Committee, I have promoted ideas by Drs. Lam and Curtis generated by their research. As the Editor, *Public Health GIS News and Information*, I have published several of their presentations given here at the National Center for Health Statistics, Centers for Disease Control and Prevention and the Association of American Geographers. Their contributions to GIS, public health and spatial analysis are outstanding.

LSU has a very talented Department of Geography and Anthropology. I support a proposal whereby new faculty, graduate students and computer labs will be added to the Mapping Science cluster in your department. This is a proactive vision and one that will elevate this Department as a premier research and teaching center for the United States. I think this is a timely and extremely important development for LSU.

Sincerely

Charles M. Croner, Ph.D.

DHHS Representative
Federal Geographic Data Committee
and
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LOUISIANA STATE UNIVERSITY

AND AGRICULTURAL AND MECHANICAL COLLEGE

Academy of Counter-Terrorist Education · Division of Continuing Education

September 22, 2001

Dr. Andrew Curtis
Louisiana State University
Department of Geography and Anthropology
227 Howe-Russell
Baton Rouge, Louisiana 70803

Re: Letter of Support

Dear Dr. Curtis:

The Academy of Counter-Terrorist Education through Louisiana State University, Department of Continuing Education is privileged to write this letter of support for the Department of Geography and Anthropology for your application for funding for Information Technology monies. With the awarding of these monies to enhance the Geographical Information System (GIS) and the development of a computer laboratory, the Academy of Counter-Terrorist Education will increase opportunities to further interact with the Department of Geography and Anthropology. Our past interactions with your department have assisted the Academy in providing national training to municipal, county/parish and state agencies addressing the capabilities that GIS has in improving planning and emergency response to terrorist incidents.

Our collaboration with your department will only expand with the recent events that have taken place in our nation. In our development of enhanced and new programs, we will be calling upon your department in assisting with applications that utilize GIS to meet the demands that will be placed upon our nations emergency responders. One example would be the use of a GIS application during epidemiological investigations prior to and after a potential Biological incident. It is critical that the Academy and the Department of Geography and Anthropology further interact to enhance the capabilities of our nations first responders to utilize the attributes that GIS can provide during terrorist incidents.

If anyone has any questions concerning our partnership, please have them contact me.

Respectfully,

Stephen L. Guillot, Jr.
Director



LOUISIANA STATE UNIVERSITY

AND AGRICULTURAL AND MECHANICAL COLLEGE

Coastal Studies Institute • Center for Coastal, Energy & Environmental Resources

September 23, 2001

TO: IT evaluation committee

FROM: Gregory W. Stone
ExxonMobil Professor

RE: Geography & Anthropology Proposal

As a former member of the Department of Geography and Anthropology, I wish to endorse the department's proposal to secure IT funding for additional hardware and faculty resources. This department has a long-standing tradition of excellence in geography, and more recently in Geographic Information Systems. The proposal reads as a logical and well-conceived expansion of expertise and resources over a three-year build out period. Building on the strengths of several senior and junior faculty members, it would appear that the objective of strengthening and expanding the GIS program would indeed be realized. In addition, with IT-funding the group in the department would be well poised to collaborate with research institutes such as CSI, and also with the newly formed Department of Environmental Science here at LSU. If funded and the objectives put forth in their proposal actually met, the faculty in Geography and Anthropology could take their program to new levels. Traditionally the department has worked on both basic and applied research problems. With enhancement, the department could play an even greater role by way of service to the State of Louisiana.

I urge the committee to give this proposal serious consideration given the high potential return on the IT investment.