

FY 2008 Technology Fee Proposal

Submitting Organization:

Major Unit: College of Arts and Sciences
Department: Geosciences

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1. Project Short Title

<i>Geospatial Laboratory Infrastructure Upgrades, Open Geospatial Laboratory</i>
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2. Total Requested

Fiscal Year 2008

\$27,815.00

3. Executive Summary

Project Description (three or four sentences)
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The former Cartography/GIS lab was moved from 343 Sparks Hall into 365 Sparks Hall (includes 362/364 and 368) to be transformed into an open geospatial laboratory. This proposal seeks hardware upgrades for the equipment used in the student computer lab, and to renew the annual licenses of the software used in this lab that supports teaching and learning of geospatial applications. Continual participation in the GHEAK program with other units within the University System of Georgia ensures that a site license will continue to be offered at Georgia State University for Leica Imagine GIS software.

4. Project Description

Geospatial skills are rapidly becoming essential to business, government, and academic sectors. Potential students are seeking universities that offer the best instructional experience and technological exposure. This proposal seeks to continue improvements to the new Department of Geosciences instructional and research technology infrastructure in order to offer students a competitive advantage through the entire process of digital fieldwork, data acquisition, management, analysis/visualization, and effective dissemination. Our 2007 Technology Fee Award enabled us to extend our digital mapping and data collection capabilities to the field. In the past year we have made renovations to our department for an open geospatial laboratory and now seek to upgrade the existing computer equipment in this lab. Further, this proposal seeks the continuing support of the annual Georgia's Higher Education Annual Kit (GHEAK) program which provides a suite of special photogrammetry, remote sensing, and geovisualization software, and gives a 50% discount to students seeking vendor instruction. GeoPDF is another application we seek to renew, which enables us to print georeferenced Adobe PDF maps in student theses, dissertations, and other research work.

Record the review numbers assigned by IS&T and Facilities. Their assessments must be included in Sections 16 and 17.

IS&T: IST08-101
Facilities: 14682-07

5. Relevance to Regents Guidelines

[1] Technology fee revenues should be used primarily for the direct benefit of students to assist them in meeting the educational objectives of their academic programs.

The system, with integrated information, enhances their productivity in the classroom, reinforces standards in spatial analysis and mapping, and allows training in database creation and management.

[2] Technology fee revenues should be used to assure that there are sufficient campus licenses for primary productivity tools such as those found in the Microsoft Office product suites for discipline specific software.

The proposed system allows students to have access to several Geographic Information Systems, GIS (GSU-licensed) software and, and software for digital mapping, visualization, spatial analysis, and processing in the computer lab.

[3] Technology fee revenues should be used for hardware and Network related expenditures that include support of general purpose or special purpose laboratories used by students for body productivity and more discipline related activities.

We are purchasing new computer work stations, and the proposed system uses the existing University wireless and wired networks, The laboratory gives students access to licensed GIS and remote sensing software, databases, geographic, geologic, and topographic maps, and satellite images, . The system will be used by a large number of students in the laboratory .

[4] Technology fee revenues may be used for training of students and, to a lesser extent, staff and faculty.

The GHEAK license provides a 50% discount on training to students, staff, and faculty. Workshops will also be held in this facility. The system will be used exclusively by the students for their class assignments and research projects.

[5] Technology fee revenues may be used to leverage other funds where appropriate.

The laboratory upgrades will append to previous year’s Tech Fee acquisitions. The new workstations will connect to the ArcGIS server, which enables students to publish their GIS projects online, and to connect to a central GIS database. Data captured by the toughbooks, from last year’s Tech Fee, will allow field data to be brought into the lab for further processing and analyses. Major unit funding has already renovated the space and expanded the network ports.

[6] Technology fee revenues may be used--with caution--for new staffing that is either temporary or ongoing.

No staffing is needed for the proposed project.

[7] Lower priority uses of technology fee revenues

No hardware or software is requested for the sole use by the faculty. No consumable supplies are requested.

[8] In almost no cases should technology fee revenues be used for administrative software

The system does not involve any administrative use

6. Relevance to Strategic Plan(s)

University 2005-2010 Strategic Plan (approved by Senate 2/17/2005)

(http://www2.gsu.edu/~wwwact/pdf_plan_archive/2005_strategicplan.pdf):

“A goal is to continue to remain current in the application of computing and information technologies”:

The proposed system applies state-of-the-art GIS-based information technology in computer-based data acquisition, sampling and mapping, database application, and visualization of information.

“A long-term goal of enhancing student access to information technology resources ...”

The proposed system provides instantaneous and thorough GIS-based environment in classroom and in the field, permitting students to focus on critical thinking and data analysis and not just data collection as is the case in traditional paper-based mapping and data acquisition.

“The University is committed to have its undergraduate, graduate, and professional programs contribute to the economic, educational, social, professional, and cultural vitality of the city, the state, and the region.”

Many of the skills acquired through the proposed systems by students (e.g., GIS, GPS-based mapping, database utility, satellite image remote data processing) are increasingly being applied in government (e.g., EPA, USGS) and other professional organizations where they will be employed.

“Continue further development of digital content origination ...”

The system integrates a wide variety of digital media such as geological maps, digital elevation models (DEM), satellite images, aerial photographs, digital photographs, and topographic maps.

“Continue to develop programs and curricula that bridge legal theory and practice ...”

Geological and spatial data, collected during digital mapping, help students more efficiently integrate and apply the theoretical information and knowledge, learned in the classroom, in the understanding of real, complex geological and geographical problems and issues.

College:

“Provide students with the fundamental training necessary for a technology-based society by improving technology access and effectiveness”.

The proposed system provides basic training for mapping geological bodies and conducting field work, and makes advanced IT available to a wide range of students in different courses. The improvements will expand our ability to conduct workshops, thus enhancing what students learn in traditional classrooms.

“Sustain and improve an outstanding level of research and curricular innovation that will make the College increasingly attractive to a select student body”

This proposed computer workstations will connect to a geospatial server allowing students to publish their map online or in the Adobe Acrobat standard. Such a system would increase visibility of student projects on the Internet.

“The College recognizes that undergraduate sciences and mathematics programs serve as the basis for entry level high technology positions and the gateway to advanced studies in ... traditional fundamental sciences and mathematics. A keystone of these undergraduate science programs is participation by the students in research and the University has as its goal an enhancement of these efforts.”

The proposed system improves the research capabilities of undergraduate and graduate students, bringing database and data visualization and processing applications in the field and classrooms, and enhancing student research productivity.

“... the College intends to develop research and graduate programs in four areas, the fourth being the University’s inter-disciplinary environmental research effort. Support will be provided to enhance the University’s effort in this area in order to meet the environmental challenges that threaten the continued economic prosperity of the State and the health of its citizens.”

The presence of this lab, associated workshops, and connectivity to the server foster an ideal environment for interdisciplinary research. One immediate application of the proposed system is in environmental sciences, mapping, and data processing about bodies of water and soil in contaminated areas. The lab could also be used for public health GIS projects.

Department

The proposed computer-based mapping system meets the departmental goal of “obtaining suitable instructional technology equipment and support” and an outside, independent visiting committee’s recommendation that “a computer laboratory with shared software should be a long-term goal of the Department”. This system brings a significant extent of information technology into Geology and Geography courses and involves more than 1000 students.

7. Impact on Students Served

While this proposal seeks to directly meet the needs of students engaged in geology and geography instruction and research, the transformation of the existing cartography/GIS lab into an open geospatial laboratory would extend its impact to a greater student body from other departments. New hires in urban health, urban geography, biogeography/geomorphology, and hydrology as well as existing faculty in the Department of Geosciences would find this system essential for both instruction and student projects. Within the department, the proposed system will be used to support urban transportation and planning, location analysis, urban and regional planning, urban health, geomorphology, climatology, biogeography, environmental conservation, hydrology, field geology, structural geology, and several of the introductory geology and geography courses. Further, the open concept of the geospatial lab anticipates extensibility to share data resources and tools to the greater student body. The following is a partial list of some of the geoscience courses excluding seminars and directed research that will benefit:

Course	Enrollment Fall	Enrollment Spring	Enrollment Summer	Sum	Faculty Hours
Structural Geology (Geol 4013/6013)		16		16	7 hrs/wk
Basic Field Geology (Geol 4020/6020)			1	1	56 hrs/wk (In field)
Adv. Field Geology (Geol 4121/6121)			12	12	56 hrs/wk (In field)
Introductory Mapping & GIS (Geog 2206)	17		10	27	
Digital	25			25	

Cartography (Geog 4518/6518)					
Introduction to Remote Sensing (4530/6530)		12		12	
Introduction to GIS Applications (Geog 4533/6533)	26	27		53	
Advanced Geographic Information Systems (Geog 4534/6534)		12		12	
Quantitative Spatial Analysis (4520/6520)		25		25	
Biogeography (Geog 4648/6648)		10		10	
Advanced Weather & Climate (Geog 4642/6642)	22		8	30	
Total number of students impacted in one year				223	

8. Justification of Funding Requirements for Fiscal Year 2008

Object of Expense	Itemized Descriptions	Quantity	Per unit price	Extended Total
Supplies (Note: PCs under \$5,000 go here. Also, use standard dollar amounts and replacement thresholds from sections 11/12, or provide explanation in sections 11/12.)	Dell 745 Minitower	12	\$1,960.00	\$23,520.00
	Item 2			
	Item 3			
	Item 4			
	Item 5			
	Item 6			
	Item 7			
Equipment	Item 1			\$0.00
	Item 2, etc			
Software (Note: Include Vendor and Product Name.)	Layton Geoscience Map2PDF (50 seats)	1		\$795.00
	Leica Geosystems Imagine (30 seats annual)	1		\$3,500.00
	Item 3, etc			
Maintenance or Contractual Services	Item 1			\$0.00
	Item 2, etc			
<i>Board of Regents Guidelines state "In almost no cases should technology fee revenues be used for ... space renovation, or other items or activities that do not have a direct and immediate impact upon students instructional objectives." (See Attachment 1, #8)</i>				
Construction Services (Requires review of Planning & Facilities)	Item 1			\$0.00
	Item 2			
	Item 3, etc			
Network Connections and Infrastructure Costs (Requires review of UCCS)	Item 1			\$0.00
	Item 2			
	Item 3			
	Item 4, etc			
Physical Security (Note: Costs normally should not exceed 2.5% of Total Requested.)	Item 1			\$0.00
	Item 2			
	Item 3			
	Item 4, etc			
Other Expenses (explain)	Item 1			\$0.00
	Item 2, etc			
<i>Board of Regents Guidelines state "Technology fee revenues may be used - with caution - for new staffing that is either temporary or ongoing." (See Attachment 1, #6)</i>				
Staff Salaries	Item 1			\$0.00
	Item 2, etc			
Fringe Benefits	Item 1			\$0.00
	Item 2, etc			
		Hours/wk	Hourly Rate	
Student Assistant Salaries	Item 1			\$0.00
	Item 2, etc			
Graduate Student Assistant Salaries	Item 1			\$0.00
	Item 2, etc			
TOTAL				\$27,815.00

9. Consequences of Partial Funding

Only 75% funded:

Object of Expense	Itemized Descriptions	Quantity	Per unit price	Extended Total
Supplies (Note: PCs under \$5,000 go here. Also, use standard dollar amounts and replacement thresholds from sections 11/12, or provide explanation in sections 11/12.)	Dell 745 Minitower	8	\$1,960.00	\$15,680.00
	Item 2			
	Item 3			
	Item 4			
	Item 5			
	Item 6			
	Item 7			
Equipment	Item 1			\$0.00
	Item 2, etc			
Software (Note: Include Vendor and Product Name.)	Layton Geoscience Map2PDF (50 seats)	1		\$795.00
	Leica Geosystems Imagine (30 seats annual)	1		\$3,500.00
	Item 3, etc			
Maintenance or Contractual Services	Item 1			\$0.00
	Item 2, etc			
Board of Regents Guidelines state "In almost no cases should technology fee revenues be used for ... space renovation, or other items or activities that do not have a direct and immediate impact upon students instructional objectives." (See Attachment 1, #8)				
Construction Services (Requires review of Planning & Facilities)	Item 1			\$0.00
	Item 2			
	Item 3, etc			
Network Connections and Infrastructure Costs (Requires review of UCCS)	Item 1			\$0.00
	Item 2			
	Item 3			
	Item 4, etc			
Physical Security (Note: Costs normally should not exceed 2.5% of Total Requested.)	Item 1			\$0.00
	Item 2			
	Item 3			
	Item 4, etc			
Other Expenses (explain)	Item 1			\$0.00
	Item 2, etc			
Board of Regents Guidelines state "Technology fee revenues may be used - with caution - for new staffing that is either temporary or ongoing." (See Attachment 1, #6)				
Staff Salaries	Item 1			\$0.00
	Item 2, etc			
Fringe Benefits	Item 1			\$0.00
	Item 2, etc			
		Hours/wk	Hourly Rate	
Student Assistant Salaries	Item 1			\$0.00
	Item 2, etc			
Graduate Student Assistant Salaries	Item 1			\$0.00
	Item 2, etc			
TOTAL				\$19,975.00

Only 50% funded:

Object of Expense	Itemized Descriptions		Quantity	Per unit price	Extended Total
Supplies (Note: PCs under \$5,000 go here. Also, use standard dollar amounts and replacement thresholds from sections 11/12, or provide explanation in sections 11/12.)	Dell 745 Minitower		5	\$1,960.00	\$9,800.00
	Item 2				
	Item 3				
	Item 4				
	Item 5				
	Item 6				
	Item 7				
Equipment	Item 1				\$0.00
	Item 2, etc				
Software (Note: Include Vendor and Product Name.)	Layton Geoscience Map2PDF (50 seats)		1		\$795.00
	Leica Geosystems Imagine (30 seats annual)		1		\$3,500.00
	Item 3, etc				
Maintenance or Contractual Services	Item 1				\$0.00
	Item 2, etc				
Board of Regents Guidelines state "In almost no cases should technology fee revenues be used for ... space renovation, or other items or activities that do not have a direct and immediate impact upon students instructional objectives." (See Attachment 1, #8)					
Construction Services (Requires review of Planning & Facilities)	Item 1				\$0.00
	Item 2				
	Item 3, etc				
Network Connections and Infrastructure Costs (Requires review of UCCS)	Item 1				\$0.00
	Item 2				
	Item 3				
	Item 4, etc				
Physical Security (Note: Costs normally should not exceed 2.5% of Total Requested.)	Item 1				\$0.00
	Item 2				
	Item 3				
	Item 4, etc				
Other Expenses (explain)	Item 1				\$0.00
	Item 2, etc				
Board of Regents Guidelines state "Technology fee revenues may be used - with caution - for new staffing that is either temporary or ongoing." (See Attachment 1, #6)					
Staff Salaries	Item 1				\$0.00
	Item 2, etc				
Fringe Benefits	Item 1				\$0.00
	Item 2, etc				
			Hours/wk	Hourly Rate	
Student Assistant Salaries	Item 1				\$0.00
	Item 2, etc				
Graduate Student Assistant Salaries	Item 1				\$0.00
	Item 2, etc				
TOTAL					\$14,095.00

10. Standard Dollar Amounts

Hardware:

- **DELL 745 PC** - Advanced workstations are required to run the geospatial applications. While dual monitors are ideal for GIS work, wide screen monitors can also improve user experience in working with the tool panels and map coverage areas.

Mapping Software and Supplies:

- **GIS** - ArcMap, ArcView, ArcGIS (NOTE: GSU has site license for these ESRI products). Most of digital field mapping will be based on using the standalone ArcGIS/ArcView (8.x and later) (requires toggle attached to the parallel port). These are used for visualization (e.g., zooming maps or making them transparent to see other layers) and manipulation of spatial data. ArcMap also provides pen-based data entry, digital field notebook, and a larger, more detailed datasets. ArcGIS version 9 now provides integrated support for “digital ink”, to draw outcrops and fault and fracture traces, and real-time GPS in the ArcMap. ArcMap allows customization for tool bars for plotting outcrops, orientation symbols, fold structures, fractures, etc). ArcGPS extension allows students to locate themselves on the map. ArcCatalog will be used to store information about rock formations in custom databases. ArcScene (of ArcGIS 9) will be used to view outcrops in 3D in the context of topographic maps, aerial photos and DEM while in the field. The ArcScene also provides stereoscopic 3D visualization environment draping aerial photos on high-resolution (e.g., 10 m) DEM.

- **GIS Publication** - GeoPDF allows ArcGIS projects to be exported into Adobe Acrobat format. This is an excellent format for field annotation or publication of a GIS into theses.

- **Remote Sensing** – Leica Geosystems is the developer of IMAGINE, Leica Photogrammetry Suite, and Virtual GIS

11. Standard Replacement Thresholds

Equipment replaces Pentium® 4 equipment, see attachments.

12. Prerequisite, Non-Technology Fee Funding

N/A

13. Matching Funds

Space Renovations and the addition of network ports has been completed with support of major unit funding

14. Staffing and Other Support Availability

N/A

15. Space Availability and Impact on Facilities

This project has no impact on facilities.

16. Impact on Computing/Networking/Information Security Infrastructure

No new ports will be added to the network.

17. Physical Security Needs

None

18. Post-Project Assessment Criteria

Acquisition of hardware and software: August 2007

Installation of hardware and software: September 2007

19. Review and Acknowledgements

N/A

GEORGIA STATE UNIVERSITY
Student Technology Fee FY 2008
Itemization of Equipment to be Replaced
Due to Obsolescence or Inadequacy

Unit: *Arts & Sciences/Geosciences*

Proposal Submitter: *Hassan Babaie*

Proposal/Award Title: *Geospatial Laboratory Upgrades*

If this proposal includes a request to replace old equipment with newer equipment due to obsolescence or inadequate performance, please itemize the specific machines or software to be replaced.

Station Number	GSU ID	Serial No.	Current Room Location	Make	Model	CPU	Mhz	Manu. Date
	005069 63	F4WGF11	346 Sparks	Dell	4400	Pentium	1.6	2001
	005069 66	25WGF11	346 Sparks	Dell	4400	Pentium	1.6	2001
	005069 65	15WGF11	346 Sparks	Dell	4400	Pentium	1.6	2001
	005069 60	94WGF11	346 Sparks	Dell	4400	Pentium	1.6	2001
	005069 67	35WGF11	346 Sparks	Dell	4400	Pentium	1.6	2001
	005069 62	D4WGF11	346 Sparks	Dell	4400	Pentium	1.6	2001
	005069 77	55WGF11	346 Sparks	Dell	4400	Pentium	1.6	2001
	005069 61	C4WGF11	346 Sparks	Dell	4400	Pentium	1.6	2001

**GEORGIA STATE UNIVERSITY
Student Technology Fee FY 2008
Equipment Replacement Exception Form**

Unit: *Arts & Sciences/Geosciences*

Proposal Submitter: *Hassan Babaie*

Proposal/Award Title: *Geospatial Laboratory Upgrades*

NOTE: If the equipment you are replacing is less than a Pentium® 4 1.5GHz processor speed, you do not have to complete this form. This has been adopted as a university-wide standard of minimum performance for operating the current Windows operating systems and office suite. Just state that you are using the university minimum performance criteria.

Otherwise, please complete the following:

Specify the performance criteria used to determine need to replace equipment. Be sure to indicate the software that must run effectively on the specific machines and the associated performance level (responsiveness, etc.) required for the software to be effective.

Minimum specifications of GIS and Remote Sensing Applications are indicated by software vendor.

Explain how the performance criteria listed above relate to your unit's organizational mission and its ability to deliver the intended service effectively.

Students now only use these machines for word processing and Internet browsing

Identify the specific minimum hardware or software required to have the equipment or systems perform to the level identified in the criteria above.

The core geospatial application ESRI (ArcGIS) has a minimum of 1.0 GHz CPU recommended to run the application. The typical geospatial workstation runs several high end applications including 3D. To obtain the minimal acceptable performance a system needs a 3D capable graphics card, a 3.0 GHz CPU, and 2 GB of RAM to operate successfully.