INFORMATION ABOUT PRINCIPAL INVESTIGATORS/PROJECT DIRECTORS(PI/PD) and co-PRINCIPAL INVESTIGATORS/co-PROJECT DIRECTORS

Submit only ONE copy of this form **for each PI/PD and co-PI/PD** identified on the proposal. The form(s) should be attached to the original proposal as specified in GPG Section II.B. Submission of this information is voluntary and is not a precondition of award. This information will not be disclosed to external peer reviewers. ***DO NOT INCLUDE THIS FORM WITH ANY OF THE OTHER COPIES OF YOUR PROPOSAL AS THIS MAY COMPROMISE THE CONFIDENTIALITY OF THE INFORMATION.***

PI/PD Name: Geoffrey C Fox

Gender: ☒ Male ☐ Female

Ethnicity: (Choose one response) ☐ Hispanic or Latino ☒ Not Hispanic or Latino

Race: (Select one or more)
- ☐ American Indian or Alaska Native
- ☐ Asian
- ☐ Black or African American
- ☐ Native Hawaiian or Other Pacific Islander
- ☒ White

Disability Status: (Select one or more)
- ☐ Hearing Impairment
- ☐ Visual Impairment
- ☐ Mobility/Orthopedic Impairment
- ☐ Other
- ☐ None

Citizenship: (Choose one) ☒ U.S. Citizen ☐ Permanent Resident ☐ Other non-U.S. Citizen

Check here if you do not wish to provide any or all of the above information (excluding PI/PD name): ☒

REQUIRED: Check here if you are currently serving (or have previously served) as a PI, co-PI or PD on any federally funded project ☒

Ethnicity Definition:
Hispanic or Latino. A person of Mexican, Puerto Rican, Cuban, South or Central American, or other Spanish culture or origin, regardless of race.

Race Definitions:
American Indian or Alaska Native. A person having origins in any of the original peoples of North and South America (including Central America), and who maintains tribal affiliation or community attachment.
Asian. A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.
Black or African American. A person having origins in any of the black racial groups of Africa.
Native Hawaiian or Other Pacific Islander. A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.
White. A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.

WHY THIS INFORMATION IS BEING REQUESTED:

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PI/PD Name: Robert C Lacher

Gender: ☒ Male ☐ Female

Ethnicity: (Choose one response) ☐ Hispanic or Latino ☒ Not Hispanic or Latino

Race: (Select one or more)
- ☐ American Indian or Alaska Native
- ☐ Asian
- ☐ Black or African American
- ☐ Native Hawaiian or Other Pacific Islander
- ☒ White

Disability Status: (Select one or more)
- ☐ Hearing Impairment
- ☐ Visual Impairment
- ☐ Mobility/Orthopedic Impairment
- ☐ Other
- ☒ None

Citizenship: (Choose one) ☒ U.S. Citizen ☐ Permanent Resident ☐ Other non-U.S. Citizen

Check here if you do not wish to provide any or all of the above information (excluding PI/PD name): ☐

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COVER SHEET FOR PROPOSAL TO THE NATIONAL SCIENCE FOUNDATION

PROGRAM ANNOUNCEMENT/SOLICITATION NO./CLOSING DATE/if not in response to a program announcement/solicitation enter NSF 00-2

NSF 99-167

FOR CONSIDERATION BY NSF ORGANIZATION UNIT(S) (Indicate the most specific unit known, i.e. program, division, etc.)

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SHOW PREVIOUS AWARD NO. IF THIS IS
☐ A RENEWAL
☐ AN ACCOMPLISHMENT-BASED RENEWAL

IS THIS PROPOSAL BEING SUBMITTED TO ANOTHER FEDERAL AGENCY? YES ☐ NO ☒ IF YES, LIST ACRONYMS(S)

NAME OF ORGANIZATION TO WHICH AWARD SHOULD BE MADE

Florida State University

AWARDEE ORGANIZATION CODE (IF KNOWN)

0014894000

ADDRESS OF AWARDEE ORGANIZATION, INCLUDING 9 DIGIT ZIP CODE

Florida State University
Tallahassee, FL. 32306

NAME OF PERFORMING ORGANIZATION, IF DIFFERENT FROM ABOVE

PERFORMING ORGANIZATION CODE (IF KNOWN)

ADDRESS OF PERFORMING ORGANIZATION, IF DIFFERENT, INCLUDING 9 DIGIT ZIP CODE

IS AWARDEE ORGANIZATION (Check All That Apply)
(See GPG II.D.1 For Definitions) ☐ FOR-PROFIT ORGANIZATION ☐ SMALL BUSINESS ☐ MINORITY BUSINESS ☐ WOMAN-OWNED BUSINESS

TITLE OF PROPOSED PROJECT **ITR/EWF+IM:Computer Science Curriculum and the Next Generation of Education Technologies**

REQUESTED AMOUNT	PROPOSED DURATION (1-60 MONTHS)	REQUESTED STARTING DATE	SHOW RELATED PREPROPOSAL NO., IF APPLICABLE
$ **4,404,061**	**60** months	**09/01/00**	**0077162**

CHECK APPROPRIATE BOX(ES) IF THIS PROPOSAL INCLUDES ANY OF THE ITEMS LISTED BELOW

☐ BEGINNING INVESTIGATOR (GPG 1.A.3)
☐ DISCLOSURE OF LOBBYING ACTIVITIES (GPG II.D.1)
☐ PROPRIETARY & PRIVILEGED INFORMATION (GPG II.D.10)
☐ NATIONAL ENVIRONMENTAL POLICY ACT (GPG II.D.10)
☐ HISTORIC PLACES (GPG II.D.10)
☐ SMALL GRANT FOR EXPLOR. RESEARCH (SGER) (GPG II.D.12)
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Exemption Subsection _____ or IRB App. Date _____
☐ INTERNATIONAL COOPERATIVE ACTIVITIES: COUNTRY/COUNTRIES _____
☐ FACILITATION FOR SCIENTISTS/ENGINEERS WITH DISABILITIES (GPG V.G.)
☐ RESEARCH OPPORTUNITY AWARD (GPG V.H)

PI/PD DEPARTMENT

Department of Computer Science

PI/PD FAX NUMBER

850-644-0098

PI/PD POSTAL ADDRESS

FSU - Computational Science & Info Tech
400 Dirac Science Library
Tallahassee, FL 323064120
United States

NAMES (TYPED)	High Degree	Yr of Degree	Telephone Number	Electronic Mail Address
PI/PD NAME **Geoffrey C Fox**	**Ph.D.**	**1967**	**850-644-4587**	**gcf@cs.fsu.edu**
CO-PI/PD **Robert C Lacher**	**Ph.D.**	**1966**	**904-644-4029**	**lacher@cs.fsu.edu**
CO-PI/PD				
CO-PI/PD				
CO-PI/PD				

Received :04/17/2000

CERTIFICATION PAGE

Certification for Principal Investigators and Co-Principal Investigators:

I certify to the best of my knowledge that:

(1) the statements herein (excluding scientific hypotheses and scientific opinions) are true and complete, and
(2) the text and graphics herein as well as any accompanying publications or other documents, unless otherwise indicated, are the original work of the signatories or individuals working under their supervision. I agree to accept responsibility for the scientific conduct of the project and to provide the required progress reports if an award is made as a result of this proposal.

I understand that the willful provision of false information or concealing a material fact in this proposal or any other communication submitted to NSF is a criminal offense (U.S.Code, Title 18, Section 1001).

Name (Typed)	Signature	Social Security No.*	Date
PI/PD **Geoffrey C Fox**			
Co-PI/PD **Robert C Lacher**			
Co-PI/PD			
Co-PI/PD			
Co-PI/PD			

SSN's are confidential and are not displayed *ON FASTLANE SUBMISSIONS*

Certification for Authorized Organizational Representative or Individual Applicant:

By signing and submitting this proposal, the individual applicant or the authorized official of the applicant institution is: (1) certifying that statements made herein are true and complete to the best of his/her knowledge; and (2) agreeing to accept the obligation to comply with NSF award terms and conditions if an award is made as a result of this application. Further, the applicant is hereby providing certifications regarding Federal debt status, debarment and suspension, drug-free workplace, and lobbying activities (see below), as set forth in Grant Proposal Guide (GPG), NSF 00-2. Willful provision of false information in this application and its supporting documents or in reports required under an ensuring award is a criminal offense (U. S. Code, Title 18, Section 1001).

In addition, if the applicant institution employs more than fifty persons, the authorized official of the applicant institution is certifying that the institution has implemented a written and enforced conflict of interest policy that is consistent with the provisions of Grant Policy Manual Section 510; that to the best of his/her knowledge, all financial disclosures required by that conflict of interest policy have been made; and that all identified conflicts of interest will have been satisfactorily managed, reduced or eliminated prior to the institution's expenditure of any funds under the award, in accordance with the institution's conflict of interest policy. Conflict which cannot be satisfactorily managed, reduced or eliminated must be disclosed to NSF.

Debt and Debarment Certifications

(If answer "yes" to either, please provide explanation.)

Is the organization delinquent on any Federal debt? Yes ☐ No ☒

Is the organization or its principals presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency? Yes ☐ No ☒

Certification Regarding Lobbying

This certification is required for an award of a Federal contract, grant, or cooperative agreement exceeding $100,000 and for an award of a Federal loan or a commitment providing for the United States to insure or guarantee a loan exceeding $150,000.

Certification for Contracts, Grants, Loans and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, ''Disclosure Form to Report Lobbying,'' in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

AUTHORIZED ORGANIZATIONAL REPRESENTATIVE	SIGNATURE	DATE
NAME/TITLE (TYPED) **Raymond E.Bye,Jr., Interim VP Rsrch**		**04/17/00**

TELEPHONE NUMBER	ELECTRONIC MAIL ADDRESS	FAX NUMBER
850-644-5260	**nsfaward@res.fsu.edu**	**850-644-1464**

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Received :04/17/2000

Project Summary: **Computer Science Curriculum and the Next Generation of Education Technologies**
We present a proposal for innovative research into both the methodology and technology needed for new models of computer science education that will be accessible to a broad range of learners. The team consists of Florida A & M, Florida State, Jackson State, Mississippi State, the NSF Education Outreach and Training effort in the PACI program and several other historically black colleges and universities.

The challenges of meeting the growing demands for highly trained computer professionals while simultaneously adapting curricula to the rapid advances in computer technology are not being met by traditional educational methods. Fortunately, these rapid advances further allow new types of interactive courseware, reusable learning object modules, new learning environments and new business models for educational infrastructure. This proposal weaves these themes together to develop prototype undergraduate computer and computational science curriculum learning modules and conduct research in the area of distance and distributed learning environments deployable within the next few years. While this proposal has strong participation from HBCU faculty and focuses on attracting students from under-represented groups, the dissemination of modules is not limited to a particular population. In addition to the HBCUs, the existing FSU distance education activity aimed at flexible education for the life-long learner will be a second testbed. We will research architectures that allow modular courseware developed by different authors and authoring strategies. Further we assume that learning environments should allow integration of capabilities from multiple academic and commercial sources. The major components of the project will be:

- Development of interactive computer science courseware reusable learning object modules exploiting the best educational technologies and preparing tomorrow's undergraduates for careers involving computers. These courseware modules will be integrated into existing computer, computational and information science curriculum course sequences;
- Research in and prototype development of a next generation learning environment exploiting the best academic and commercial ideas in both the education specific and general information areas. This environment will support synchronous, asynchronous and interactive learning models;
- Delivery to a broad-based student body, the new course modules developed by teachers from the participating universities;
- Assessment and evaluation of both the new curriculum material and the information technology used to prepare and deliver it.

A major result will be a networked computer and computational science courseware module delivery system. These courseware modules presented over the Internet will supplement on-campus CS curricula courses at HBCUs and other major CS departments around the country. This infrastructure will build on experience gained from the current successful delivery system used at Syracuse with CS courses taught to other sites including Jackson State (an HBCU). Jackson State now uses this delivery technology to teach CS courses at Morgan State. This effort is having a significant effect on the pipeline of minority CS graduates, enhancing the quality of their education and also serving to increase the attraction of a computer science career. We will expand this successful activity by providing the delivery of learning modules to other HBCUs – initially Morgan State and North Carolina A&T, Elizabeth City, and Spelman.

We will adopt a well-designed curriculum model built in terms of reusable modules stored in a common repository that will be a resource to be used by our Web-based educational system and also a basis for our broader dissemination efforts. Our approach to education technology will be built around the concept of a collaborative portal with shared events supported in both synchronous and asynchronous mode. We will research a new system using ideas and components from previous commercial and academic systems such as Syracuse's synchronous TangoInteractive system developed over the last three years. We will also exploit Florida State's experience using the commercial Blackboard technology and a recent complete evaluation of current practice from Mississippi State. We will use a distributed object framework such as Ninja from UCB or E-Speak from Hewlett-Packard and systematic use of XML metadata conforming to community standards such as IMS, ADL and IEEE. A key requirement and major research issue will the ability to support course modules and tools from multiple sources interoperating with common services and interfaces. Another major computer science research topic will be the investigation of a federated event system within existing distributed object frameworks. This will enable more powerful robust portal services including collaboration and personalized information.

This proposal forms a unique partnership consisting of HBCUs, research institutions, international research centers, and a selected number of Florida community colleges. The network described in this proposal provides an overall organizational structure, which will leverage existing research expertise among participating institutions, assist in the development of a pool of minority researchers, and facilitate joint university cooperation and collaboration at a high level.

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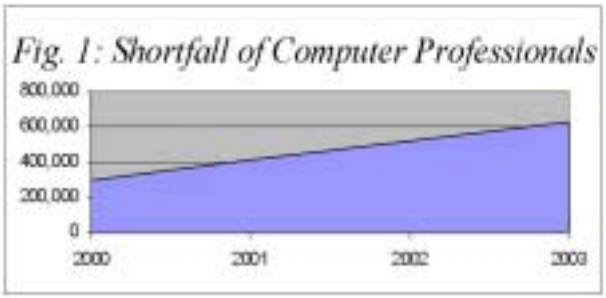
A	Project Summary (not to exceed 1 page)	1	
B	Table of Contents (NSF Form 1359)	1	
C	Project Description (plus Results from Prior NSF Support) (not to exceed 15 pages) **(Exceed only if allowed by a specific program announcement/solicitation or if approved in advance by the appropriate NSF Assistant Director or designee)**	15	
D	References Cited	4	
E	Biographical Sketches (Not to exceed 2 pages each)	30	
F	Budget (NSF Form 1030, plus up to 3 pages of budget justification)	52	
G	Current and Pending Support (NSF Form 1239)	18	
H	Facilities, Equipment and Other Resources (NSF Form 1363)	2	
I	Special Information/Supplementary Documentation	40	
J	Appendix (List below.) **(Include only if allowed by a specific program announcement/ solicitation or if approved in advance by the appropriate NSF Assistant Director or designee)**		
	Appendix Items:		

*Proposers may select any numbering mechanism for the proposal. The entire proposal however, must be paginated. Complete both columns only if the proposal is numbered consecutively.

1 Motivation: Workforce, Technology and Education

The continued and growing need for computer professionals is documented in many formal and informal ways. Data from the U.S. Bureau of Labor Statistics suggest the need for a 70% increase in the production of these professionals and the figure shows this in another way as the expected growth in shortfall [1]. It is clear that the number of graduates produced by the nation's universities will be insufficient to meet this demand and we already see an influx of companies hiring non-US citizens, who are ready and willing to fill these jobs. Additionally many companies are hiring persons with scientific degrees in other disciplines (math, biology, statistics, etc.) and training them in abbreviated fashion to fill computing jobs. NSF Science Resources Studies, the National Center for Education Statistics and the Commission on Professionals in Science and Technology have documented such trends and the latter has in particular highlighted a serious deficiency in the number of minority computing professionals [2]. We suggest that existing universities can meet this need for computer science graduates by turning to distance education.



It appears that traditional approaches are not adequately addressing these trends and in this proposal we will research novel approaches to computer science education that will both increase the quality of the learning environment and allow the increase of graduating students needed by the nation. The products of the proposed work will be the development of new reusable computer science learning object modules and the assessment of new technology for learning environments. There has been a rapid profusion of commercial training efforts in this arena [4] but we will focus on higher education courses, which have been proven to be more effective for producing students with lasting knowledge. We have chosen two distinct and important student bodies as testbeds for our curriculum: firstly a network of historically black colleges and universities (HBCU) led by project partners Jackson State University (JSU) and Florida A&M University (FAMU) who have already had substantial success in internet based curriculum. Secondly the state of Florida represents one of the fastest growing states with significant large and small computer-based businesses and a clear need for flexible lifelong learning. Here the second major project partner is the Florida State University (FSU) Office of Distance and Distributed Learning (ODDL) with institutional responsibility in this area and a new computer science curriculum as a major initial thrust.

Teaching computer science is particularly challenging as the growing student interest is coupled with increasing difficulty in hiring good faculty and the need for constantly updating courses and entire curricula to maintain relevance in a technology cauldron stirred with Internet time. Our testbeds are set up as institutional networks shown in the center of fig. 2 that naturally allow faculty, mentors and students to participate in the learning process and so increase the pool of qualified and current teachers. Course content changing with Internet time implies substantially more faculty involvement in the continuing evaluation and upgrading of the curriculum. This accentuates the need for quality learning environments that scale to many more students than a traditional classroom. This naturally suggests Internet based distance education supported by a hierarchical network of teaching assistants, mentors and faculty.

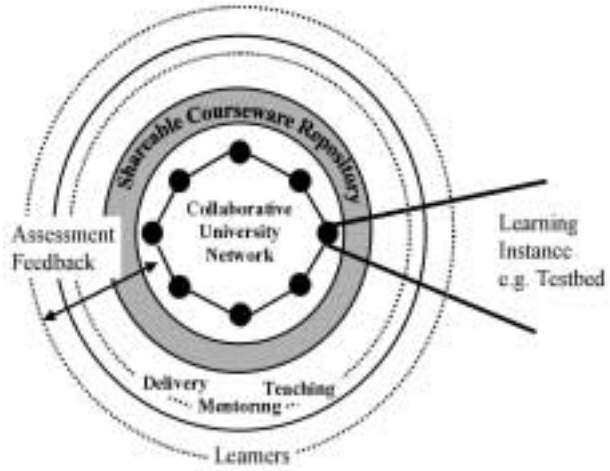


Fig. 2: Collaborative University and Education Delivery Model

This strategy is illustrated in fig. 2 which shows our proposed collaborative network of universities designing and developing shared courseware placed in a repository managed by a modern distributed object system. We expect that each network member would integrate the shared courseware repository into separate learning instances. These are particular course programs leading to degrees meeting the special needs of their learners and other stakeholders. Mentors and teachers who may or

may not be part of the degree-granting university support this delivery as necessary. The technology component of our project will research and deploy a mix of academic and commercial capabilities to enable such a learning paradigm. Several approaches to web-based (distance) education have been developed and applied with some success. These include the largely asynchronous database linked commercial Blackboard system being deployed by FSU and the synchronous collaboration based courses delivered over the last 3 years between Syracuse (Fox) JSU and other HBCUs [8,9]. Looking to the future, distance education will be a key part of the efforts to increase the efficiency of higher education and to adapt curricula to the changing demands of modern society.

There are many possible models for web-based education but we suggest that there are no clear "winners," for today what we see is warped by institutional legacies and immature technology. Synchronous instruction comes with an ongoing high price tag that cannot be reduced due to the human factor (faculty) and his/her limited availability in time. Asynchronous education has a higher up front cost, which is a challenge for rapidly varying curriculum in an environment where authoring technology is still changing rapidly. We see the needs for unified systems supporting different interactivity models and further that this choice will be customizable to the individual learner. We anticipate that five years from now the seeming oxymoron of providing individualized education in the mass production learning environment of a virtual university should become reality. The computer science research component of our proposal will develop a framework built around collaborative portal technology that will support these key characteristics of unification of interaction paradigms and the customizability for each learner. This framework must inevitably support a variety of tools coming from a mix of academic and commercial sources. Further the technology decisions will be structured as relatively short 6-12 month modular projects for the accommodation to a technology and tool environment evolving with Internet time.

As we innovate both delivery technology and computer science curriculum, the project is fundamentally centered on its learning testbeds described in Sec. 2 and the assessment activity of Sec. 3 to evaluate both technology and curriculum. The curriculum design strategy is described in Secs. 3.1 and 3.2. The computer science contributions of this proposal support both "Education and Workforce" and research in the distributed system technology to support a virtual university. The latter is described in Sec. 4 together with a discussion of important national standards activities within which we will work. In Sec. 5, we present our plans for management and research and describe our dissemination activities. Sec. 6 summarizes the capabilities of the key participating institutions. In the International appendix, we describe three existing activities in Africa, China, Europe and South America which will be very synergistic with this project and derive mutual benefit from visitors programs and the exchange of course modules and technology.

2. Collaborative University Network

2.1 Computer and Computational Science Testbeds

The project is centered on computer science education in two major testbeds. The largest will be a network of HBCU's starting with our computer science partners JSU, FAMU, Morgan State, North Carolina A & T. These institutions are joined by HBCUs Elizabeth City, and Spelman for computational science. An essential idea behind our approach is the scaling of quality educational material by using technology that supports dissemination to many students and simultaneous training of teachers, mentors and assistants. We will implement this by the exchange of material between the participating universities; a concept successfully tested by Syracuse, JSU and Morgan State [9]. The next steps in this process are given in more detail in Sec. 5.2 and include:

1. Identify similarities among curriculum and course content characteristics that allow categorization of courses and places where courses can be shared.
2. Identify candidate course delivery mechanisms.
3. Provide adequate infrastructure at participating colleges/universities.
4. Deliver similar course content with different technologies using flexible multi-source framework of Sec. 4.

Evaluate results using assessment process of section 3. This will lead to an understanding for each of several categories of courses, which technologies/software tools/environments are best suited for course delivery, in both distance education and the resident classroom.

Further HBCU partners in existing programs with which we are associated, will be used to expand the network in future years. This includes DoD PET (Programming Environment and Training) partners at ARL, ASC, ERDC and NAVO: Alcorn State University, Central State University, Clark Atlanta University, Grambling State University, Southern University, Tennessee State University. The NASA Minority University - Space Interdisciplinary Network (MU-SPIN) [7] Network Resource and Training Sites (NRTS) bring City College of

New York (CCNY), Elizabeth City State University, Prairie View A & M University, South Carolina State University, Tennessee State University, University of Texas at El Paso. The Army High Performance Computing Research Center involves Clark Atlanta University, and Howard University. For the first two years, we anticipate that the initial 7 HBCUs in computer science and computational science will pioneer the collaborative network and once this is successful, we will judiciously expand the project using these other colleges for which partnerships are already in place. The organization of these partners will be the responsibility of JSU, which has recognized that Web-based distance education technologies offer tremendous potential benefits to the HBCU/MI (minority institution) community, including curricular enhancement, sharing of limited resources, and collaborative teaching/learning. JSU has already developed a university wide strategic plan for distance education and training that we will leverage in this NSF ITR proposal. While this effort involves multiple universities, many of these universities have existing experiences with this type of collaboration and others share a close proximity to one another. This proposal builds on on-going strong collaborative efforts and poses no problems with close working relationships.

A successful collaborative university network requires that the partners have adequate infrastructure in place to support the innovative course development and delivery. This infrastructure includes 1) suitable physical classroom facilities, 2) a reliable and sufficient connection to the Internet, and 3) on-site human resources. JSU has gained considerable expertise and experience with respect to what is needed, and effective procedures to overcome the barriers to implementation. This gives us a heads start on the design, planning, procurement, and installation of required equipment and connections at selected partnership institutions. The project will establish the necessary process and infrastructure for the training of collaborating faculty and staff. We will initiate this with a fully equipped, and staffed, teaching and learning laboratory at JSU that will allow 1) collaborative course development and 2) cost-effective local and remote instructional training with collaborating schools. Such training and support is essential to the success of this project. We intend to build upon this foundation and develop a national resource for technologies supporting electronic delivery of education and training, which will facilitate inclusion of, and broaden the participation of, underrepresented groups in information technology careers. Note we do not intend to supply significant network infrastructure as part of this proposal as NSF already has in place efforts in this area. There is for example the Educause/NSF PACI EOT Advanced Networking Project with Minority -Serving Institutions (AN-MSI) grant. Roscoe Giles as joint leader of the Partnership for Advanced Computational Infrastructure Education, Outreach and Training (PACI EOT) will ensure this synergy. We hope that membership in our network will encourage universities to upgrade their IT infrastructure, which will of course have far reaching benefits outside our project.

Faculty and staff in the network of universities, will develop course module content, receive courses from other institutions, and deliver courses to partner schools. Some results of this process will be:

1) Well-defined principles for course module development and delivery.
2) A coalition of HBCU/MI equipped to develop, deliver and receive courses.
3) A large number of faculty, staff, and students who are more IT literate.
4) A large number of students and teaching assistants who are better trained for IT careers.

In addition to being an existing network of collaborators and representing a highly desirable target population, the HBCUs bring another unique advantage to the table: their historical mission has been to educate under represented people and empower them both to enter the mainstream and/or become leaders of the community. A special element of their programs has been the special attention paid to developing students and to the relation of their students to society. Arguably, the rapid onset of the eWorld and the consequent need for and shortage of IT workers has created similar challenges for many of America's educational institutions: (a) many people at the margins of the IT revolution need to be educated to effectively participate in and lead it; (b) student need to be better prepared for employment in the 21st century workplace and (c) much of the academic content is generated outside the institution, imported and adopted. Thus the choice to work with HBCUs represents a mechanism for prototyping and developing best practices that will apply to the country as a whole. In this sense, HBCUs are leading the development of new curriculum and associated required technology that will generalize to major communities nation-wide.

In the next section we describe our second testbed where the network consisting of FSU and Florida community colleges is already in place. Here we will use project courseware repository, technology and methodology and see how the different student demographic and more tightly coupled organization affect the success of the approach depicted in fig. 2

2 Flexible Lifelong Learning Testbed

2.1 Introduction

Florida State University in engaged in several university wide initiatives that are synergistic with this proposal. The long-term goal of this project is to provide high-quality courses and degree programs to Florida Community College Students, FSU students in residence, students at FSU's international branch campuses and working professionals. FSU is currently establishing the personnel, procedural and technological infrastructure necessary to support these activities. FSU's Department of Computer Science, working in cooperation with the State Community College System, has developed a new 2+2 program that allows student with the equivalent of a 2-year Florida Associate of Arts degree to complete a Bachelors degree via distance learning. Working with this institutional effort gives us access to professional infrastructure in areas like assessment and technology support. Further it gives us a very different student body to work with – typically more mature students and often with a daytime job. Any learning environment that it is broadly useful must support this typical lifelong learning scenario. FSU has designed its approach to distance education to give equal educational opportunities for residential and distance learners. This allows us to tie the lifelong learning testbed to traditional undergraduate education as FSU will contribute to and access the shared courseware repository for both types of students.

2.2 Three-Layer Delivery Model

FSU has designed a three-layer model of delivery, which is very consistent with the approach we intend to use here and used in Syracuse-JSU distance lectures. FSU's system is adapted from two proven models of "middle-layer mediated" instruction: the large-lecture class, run by a senior faculty member and mediated with teaching assistants (TAs); and the tutor system developed over the last 30 years by the Open University (OU) in Great Britain. Unlike the paper and British Post system of the OU, however, our system uses the full power of the Internet to facilitate rapid and timely interactions among students, mediators, and faculty. The mediators in this instance are called *mentors*. Mentors are recruited from a pool of applicants drawing from Community College faculty and qualified private sector individuals. The lead faculty member and the academic unit offering the program do selection and appointment of mentors from the candidate pool. Creation and management of the mentor candidate pool are coordinated centrally by ODDL.

FSU's experience so far is that this 3-layer model is both highly effective in teaching students and efficient with faculty time. It can be used in both the classical (large lecture, TA-mediated) and distance (Internet-supported, mentor-mediated) modes. FSU is now adapting this model to its growing list of branch campuses and international centers described in the international section of the proposal. Without making rules, a culture of communication has been established in which the mentor is the student's first point of contact. By handling most communications locally in the hierarchy, and keeping the student/mentor ratio low, this system has alleviated the problem of communication overload that has been typical of less organized, email-based attempts at Internet-supported distance learning. We will use these lessons in the HBCU network and an important result of this project will not only be such methodologies but also the technology to support them.

2.3 Enabling Infrastructure

There are several key features of FSU's effort that help create an environment in which we can test our technologies, resources and ideas in a wide variety of situations and get participation from students who have a diverse set of goals, interests and skills. In particular FSU's effort solves problems and provides resources that would not be possible within the scope of this project. For example, numerous institutional obstacles, such as requiring students to come to Tallahassee to get a picture student ID card or to get student loans are being removed. Additionally, a 24-hour-a-day, 7 days a week, online help desk and phone support system is being created to assist distant students with computer problems. FSU is establishing a network for recruiting and training the mentors discussed above. A high-quality cadre of mentors to assist students locally makes it possible to test the scaling of our efforts with large numbers of students. Finally, FSU is establishing the computer hardware and software infrastructure required to support large-scale delivery of courses.

The FSU Office for Distributed and Distance Learning (ODDL) operates in several university-wide service capacities. Direct and indirect support is offered to faculty and departments for development of multi-use courseware. ODDL is the principal support organization for coordinating the delivery of FSU's 2+2 programs and other distance programs, undergraduate and graduate. ODDL also operates a Production Center offering services including evaluation, instructional design, media creation and consultation. Finally, ODDL coordinates various student support services for distance students, including admissions, registration, and advising support for academic units.

Several of the people on this proposal (Lacher, Dennis, Dragovitsch and Fox) are actively involved in directing FSU's university-wide efforts. Lacher is Director of the Office of Distributed and Distance Learning, which is helping faculty create the online curriculum. Dennis is directing effort to develop tools to help faculty whose instructional needs are not being met by the standard online environment (CourseInfo). Dragovitsch is organizing faculty from across the campus to serve as an advisory team for this project. Fox has just been appointed chief technologist for ODDL, which quantifies the University commitment to integrate "what works today" with an innovative vision of the future.

2 Learning Modules and the Shared Courseware Repository

At the heart of the FSU delivery model is a set of core curriculum components. It has become increasingly clear that there is considerable effort and expense involved in developing reusable and retargetable activities and materials. This effort is repaid, in part, by the inherent accumulation effect, wherein the components are saved from one offering to the next, continuously improved over time, and added to by a variety of contributors. Nevertheless, the effort and expense are such that the sharing of components, across time, across courses, across programs, and across universities, would be ideal. The essentially standardless system currently in use (at FSU and elsewhere) produces some excellent materials, but re-use requires person-to-person interactions and intimate knowledge of how the materials work. What is needed is an organizing and unifying system of shareable learning objects that facilitates the use and recombination of components with only external knowledge of these components.

The collaborative unifying system of courseware development and re-use proposed herein exactly meets these needs. All three uses of the middle-layer-mediated delivery model (classical, distance, and branch campus) are learning instances (testbeds) in the sense of Figure 2. FSU will make significant use of the shareable courseware repository as well as contribute to the repository. Value will be added for FSU as well as all other users of the repository, resulting in both increased efficiency and higher quality of computer science programs.

The computer sciences/software engineering curriculum re-design underway at FSU is built on several organizing themes. There is a *breadth-first* introduction, in which most of the important *curriculum threads* are initiated. *Object-oriented* programming is emphasized. *Analysis and design* (beginning with object-oriented) are taught early and integrated into the rest of the curriculum. And a *systems view* is taken throughout. Of course, the process is fully informed by *national standards* (ACM, IEEE), the *research strengths* of the department, and the *consumer community* (students and employers). The detailed design and implementation of this new curriculum is taking place over a four year period beginning in Fall 99. The new coursware already created will be revised for the evolving repository standards, and the courseware developed in the future will be written to these standards.

2.1 Authoring of Curriculum

The course material will be primarily aimed at undergraduate computer and computational science students but we will include both middle/high school and graduate level courses where we have success in the past [3]. We will develop (and use pre-existing) interactive material and common subject specific resources such as quizzes and glossaries. As described in Sec. 4, a major challenge will be to ensure that we have identified the correct places to define standards (in XML). Further we must establish the happy compromise between total freedom in choice of authoring tools and the restrictions imposed by the capabilities of a realistic system framework. For instance the collaboration and assessment services will support some methodologies (e.g. Java and HTML/XML) better than other specialized authoring formats for which the internal event structure and document object model is either unknown or not in accordance with standards like those of the W3C [10].

3 Learning Framework

3.1 Model for curriculum development and the learning object repository

3.1.1 Background

Curriculum models for computer science are developed in a number of ways. A systematic approach to curriculum development would identify the stakeholders in the final product of the curriculum and determine the requirements of those stakeholders. Stakeholders may include students, industry, government, graduate research institutions, and funding providers. As shown in fig. 3, a well-designed curriculum is likely to be influenced by a number of sources including prospective employers, recommendations from professional bodies (e.g. ACM[1], the internal faculty, government standards, and general commentaries on curriculum matters by

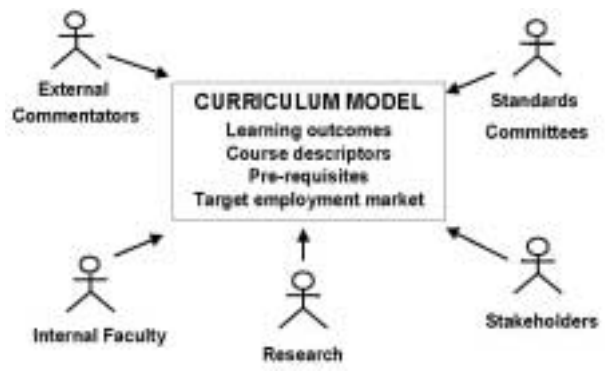


Fig. 3Curriculum Design Model

external commentators. External commentators could include advisors, curriculum design experts, expert teaching and research faculty, and those who make general statements on curriculum matters in professional publications. Research influencing curriculum development should include computer science research, which provides the direction for future educational needs, as well as educational (e.g. [9]) and skills research (e.g., [9]).

Most experts encourage a top-down approach to curriculum and course design where the high level learning outcomes are specified for the curriculum [20]. Once these outcomes have been agreed upon, they will be refined into more specific competencies and courses emerge from assembly of related learning objectives. Educational researchers have developed techniques to assist in this process, e.g. [27]. Specific learning outcomes should drive the selection and development of learning resources, technologies that mediate the educational experience, and assessment.

This is an idealized model of curriculum development and is seldom completely applied. Often curricula are developed with little reference to outside sources. In practice, the curriculum is a result of compromises between the views of internal faculty as to what is appropriate to teach. Many curriculum developers approach the problem as one of identifying courses rather than identifying desired learning outcomes. If we take the analogy with software engineering this is akin to identifying the sub-system architecture prior to determining the systems requirements. Specific learning outcomes, if they are articulated, are derived in a bottom-up design process from the chosen learning materials (usually textbooks).

The systematic top-down process (instructional systems approach) and the informal bottom-up process (traditional reliance upon existing faculty expertise) are two extremes and most curriculum development falls between these. As new curricula are developed or existing curricula revised (a frequent occurrence in computer science), there has been a trend towards a more systematic approach, with accreditation and review processes expecting specified learning outcomes and clear rationales for design choices.

Course developers are often constrained in the learning materials available, most especially in the rapid deployment world of computer technologies. The traditional learning tool has been the textbook, which attempts to cover the learning requirements for a whole course. A textbook is seldom an optimal solution for a course developed using a top-down model, unless it was written to meet a specific need recognized by an expert or experts. A textbook may miss some important learning outcomes for a course or be a poor tool in facilitating others, it often does not provide assessment tools or support different learning styles [5]. To supplement the textbook, course developers frequently have to design or obtain a great deal of additional material, e.g. notes, diagrams, animations, assignments, tutorials, and computer-aided learning modules.

Current technology allows faculty to locate existing materials on the Internet and elsewhere; however this is a difficult process due to the differing standards of description used for materials. Often materials must be downloaded and examined before a determination can be made regarding its efficacy in meeting the course needs. This source suffers the same problem as textbooks in being large packages, which are often only in part useful. When course developers put effort into developing their own learning materials for a particular course the benefits of the resulting material are seldom made available beyond the target course.

3.0 Our Approach

This project will facilitate a systematic approach to curriculum design by providing learning materials of sufficient granularity to address specific learning outcomes. It will facilitate access to learning objects with attached metadata through the Internet accessible courseware repository of Fig. 2. This general model underlies the national standards activities described in Sec. 4.2 and two well-known examples are EOE and MERLOT [29]. A key element of the learning object's metadata will be the specific learning outcomes and objectives that the object addresses.

In some perspectives, the concept of a learning object is restricted to a unit of computer-aided learning. In our perspective a learning object is any self-contained learning resource that is appropriately tagged according to metadata standards and is locatable via metadata indexing and searching services. The defining feature is not

the delivery technology, but the fact that it addresses specific learning outcomes. Thus a learning object may be delivered via a Java applet that contains an interactive simulation of a particular concept in operation, a collection of bibliographic citations, or it may be a text document describing an interactive group exercise that can be carried out in a classroom. It is anticipated that the majority of objects will facilitate asynchronous learning given the general trend towards distributed and distance education.

To envisage how the shared courseware repository of fig. 2 will work consider the following scenario: Professor Smith at the Newtown University is developing a new course in "Systems Analysis and Design using UML." This course is to be added to the undergraduate program in computer science. The professor has identified a number of specific learning objectives, including the following examples.

By the end of this course students should be able to:

"provide a critique of a given UML sequence diagram"

"convert a design level UML class diagram into C++ code"

Professor Smith selects the web reference for the learning object repository, he selects *search* and enters the keywords "UML" and "sequence diagram." The search results in the display of several learning objectives related to these keywords, one of which, "provide a learning module with an analysis of a UML sequence diagram" and another module defining the UML class diagram, sound similar to what he needs. Selecting the identified objective results in the display of a list of learning objects aimed at achieving this learning outcome, it will also display associated assessment objects. Selecting on each object name will display its detailed metadata. Included in the metadata would be such information as type of learning object (e.g. whether it is instructions for a tutorial exercise or a Java applet containing interactive practice exercise), technology requirements (e.g. requires Internet Explorer version 4 or later), peer reviews of the object's quality, student feedback on their experience using the objects, the learning model applied*. After selecting one of the objects, Professor Smith then enters the second objective, this time there are no associated learning objectives. The systems asks him if he wants to record this as an unfulfilled need, he selects *yes* and the learning objective is recorded as one where a need for learning objects exist. Professor Smith does a search for unfulfilled needs using "UML" as a keyword; this results in a list of several learning outcomes that have been entered by other professors. Professor Smith notes that a small computer-aided learning object he recently developed could fulfill one of the outcomes. He selects "submit learning object" and is then given a form to fill in the standard metadata, after doing this he is able to submit his object. Once submitted a message is automatically sent to all those professors who have registered an interest in this learning objective.

In this way the courseware repository of fig. 2 will fill with a variety of learning objects, using a variety of media and technologies, and supporting a variety of learning styles. The repository enables and assists the developers of learning objects to identify areas in which to concentrate their efforts, i.e. areas where learning objectives have no learning objects and areas where there is a need for learning objects supporting different learning models, or newer technologies. It is also possible that existing learning materials can be easily adapted to the learning object model by sectioning material into object sized units and creating the required metadata. The repository enables users of learning objects to have a common frame of reference when looking for learning materials to suit their specific requirements. The object metadata allows users to greatly increase the efficiency of their search and evaluation process when building a collection of learning materials for a course.

3 Learning Theory, Models, and Styles

Learning may be defined as a change in performance that comes about as a result of the learner's interaction with the environment. Theories of learning describe just how this might occur. The major theories of learning are behaviorism [19], cognitivism [34], and constructivism [7, 38]. Behaviorism simply links learning with changes in observable behavior; internal mental processes are not emphasized in this model. Cognitivism focuses on the mental processes that mediate learning and bridge to the observable behaviors that follow the learning intervention. Constructivism focuses on student engagement in meaningful experiences from which relevant learning is derived [8]. Consequently, instructional activities are based on curricula that range from very concrete to very abstract based on these theories, as appropriate for the learner and the subject matter.

Learning styles are based on personal preferences or capacities that determine how an individual relates to the environment. Seven types of "intelligence" have been described and learning theorists urge that attention be paid to all of these capacities in design and development of instructional activities [4]. Perceptual

* The exact composition of the metadata will be part of the research effort as described in Sec. 4 and will incorporate standards being established by bodies such as IMS.

preferences and strengths include sensing gateways, that is, auditory, visual, tactile, and kinesthetic [3]. A relationship between the continuum from kinesthetic to auditory and concrete to abstract is relevant in constructing learning experiences. It is usually the case that as the learner matures, reliance upon kinesthetic (concrete experience) learning decreases. However, it is important to be aware of the array of modes of sensing and consider the appropriate application of methods of instructional activity design to the intended learning outcomes. For example, while abstract conceptualization and metacognition are advanced (mature) learning skills, it is altogether inappropriate to rely upon one's cognitive grasp of CPR in the training process for emergency medical personnel. A strict behaviorist approach is the only valid method of ensuring effective mastery of CPR techniques.

Effective development and identification of learning objects for our computer science curriculum will be related to principles of learning theory, learning style, and instructional models. The variety of learning objects encouraged by this project in itself guarantees coverage of instruction models. The dynamic design allows for ongoing growth and revision to the repository in response to instructor and learner needs. Continuous improvement is, therefore, inherent in the repository design.

Well-designed instructional activities motivate learner interest, present new content, involve the learner in practice and application, assess understanding, and then proceed to the next learning objective [4]. In cognitivism, this process is described by the building upon an existing schema or mental structure through which an individual interprets the environment. Schemata develop and converge to alter the student's cognitive and affective domains and result in mastery and expertise, i.e., learning. Methods for presenting instructional experiences that building within and upon each other can include programmed instruction [2], discovery learning based on real problems and situations [3], cooperative learning [5], drill and practice, expository learning, inquiry-based learning [7], simulations, as well as multiple technologies for conveying these experiences. Objects may be text-based or CAI, and make use of a variety of media, both projected and non-projected [5], such as audio and/or video. Instructional design principles incorporate prerequisite skills and knowledge, learning objectives for the new instruction, methods of application of new learning, and assessment of content or skill mastery [3]. The instructor or learning facilitator will be able to choose and sequence objects appropriately by searching a standardized index of meta-tagged objects. Objects within the repository will support development of formal credit coursework, certificate programs, and just-in-time learning for training and continuing education purposes. In other words, the flexibility and variety of learning objects can satisfy instructor and learner needs in any instance of instructional delivery.

This project will ensure that our work is in accord with best practices in this field, however, we do not intend to pursue educational research issues. This will be ensured by ongoing interactions with the Learning System Institute (LSI) at FSU (with which project partner Ian Douglas has a joint appointment) and EOT PACI partners including the Center for Innovative Learning Technologies (CILT) [5].

3. Assessment Plan

Essential to quality assurance will be guidance and confirmation of adherence to principles of good practice. It is assumed that institutions submitting objects for inclusion to the repository will have assured quality standards in curriculum development, appropriateness of delivery modality, faculty support, and assessment of efficacy of learning objects. Guidelines based on those promulgated by the Western Cooperative for Educational Telecommunications and endorsed by the Southern Regional Electronic Campus will be used as a basis for ensuring quality compliance in all learning objects submitted and reviewed for inclusion in the repository.

As part of this proposal, a lead team of FSU ODDL and FAMU will assess the effectiveness of technologies, individually and collectively, intrinsically and how they are used, and use the results to continuously improve the essential goal – computer science education for the workforce of the next millennium. Our underlying principle is to provide a flexible learning environment supporting multiple learning styles and allowing dynamic choices to be made by students, faculty, and programs.

Research has consistently found little significant difference in learning achievement among various distance learning environments or between distance learning environments and classroom environments [9]. Further self-selection by students according to personal learning style needs to be recognized as an important variable. Thus we will assess taking specifically into account the learning style of the students. Our quantitative assessment will be outcomes-based, with three classes of outcomes: *success, efficiency, and satisfaction.*

- *Success outcomes* include learning outcomes, graduation rate, and employment rate.

- *Satisfaction outcomes* include all relevant populations: students (while in a class, after class completion, at program graduation, after x years of postgraduate employment), employers, faculty. We measure satisfaction with learning as well as technology acceptance and usability.
- *Efficiency outcomes* include time invested (by students, faculty, and support team per student credit hour), re-usability of courseware (across institutions as well as over time), and costs of maintenance of technology and courseware.

In two Syracuse Ph.D. theses, Lee and Sen [38] have explored the technology needed to track student progress through online material. The capability to monitor and datamine such information is likely to improve as this critical for commercial portals. We will include such assessment techniques in our project as they become useful in practice.

We will supplement the strategies above with a more qualitative assessment thrust, which includes:

- *External peer review:* ODDL is already establishing an external refereeing process for its courses and an external peer assessment process. A similar process, will be developed for review of modules submitted for the repository. It will include both testbeds and the broader national community as represented by EOT (Education Outreach and Training) effort of the NSF PACI program and the NSF CILT Learning and Intelligent Systems center [5].
- *Customer feedback*: Using interviews and focus groups from students, faculty, academic programs, and industry to assess customer satisfaction and identify areas for change and improvement.

All of the assessment results will be used in a feedback-improvement loop to continuously improve both the technology and the courseware during and after the project. The availability of useful assessment information and its use for self-improvement, particularly on time scales shorter than a semester, is largely unavailable to standard classroom instruction. Continuous (short and long time scale) self-improvement and opening the process to all possible learning styles simultaneously are two ways in which the new systems can result in better performance over classical systems.

4. Technology and Standards for Learning Environments

4.1 Overall Framework

Our approach to courseware and tools is built in terms of distributed object technology and is consistent with the collaborative university model of fig. 2 and the curriculum design model of sec. 3.1. Many commercial and academic projects developing the key technology ideas are primarily driven by areas like e-commerce and commodity Web resources, but only later and after appropriate customization can these be applied to education. We will build on the emerging integration of distributed, component, and Web technology with our approach being compatible with the many competing candidates for the base infrastructure. These include CORBA, Jini, Enterprise Javabeans, Web-linked databases, and a variety of XML and Java based systems such as SOAP [39] from Microsoft and iPlanet [7] from Sun. We consider Ninja [7] from UC Berkeley and E-Speak [8] from Hewlett Packard as interesting new approaches, and we will evaluate the new release of Ninja over the summer as a possible infrastructure for this project. We also see some analogies between the requirements for a learning environment and the successful but controversial Gnutella [6] or Napster [7] type distributed archive technology for multimedia material.

To ensure that we can protect our investment we will adopt well-defined interfaces implemented in terms of XML and if necessary change our implementation as technology evolves. We introduce a 3-tier architecture with client, server and backend resource and the two interfaces, as shown in Fig. 4 [9]. This approach has been adapted successfully in the Gateway Web based computing project [4] with the use of two interfaces separating the user and system object view and insulating both the user interface and repository resources from the changing server infrastructure. As a simple example from the relational database field, resourceML would define the table structure used to classify the data while portalML would support user queries in SQL. Our application is detailed later in fig. 5 and the backend includes the

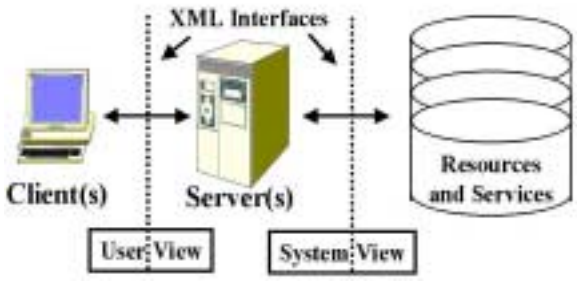


Fig. 4: Learning System Architecture with two Interfaces. User View (portalML) and System View (resourceML)

courseware as well as the events (information nuggets) describing the users and their interactive sessions. Our proposed system will support the courseware developer who is adding or editing modules as well as the learners and teachers accessing the courseware repository. In addition it will provide tools to support person to person and person to database interactions. As discussed in Sec. 2, existing standards efforts have provided a good start to these interfaces although they are based on a less sophisticated client server model and essentially merge these two interfaces. In Sec. 3, we elaborate our technical approach built around the concept of a collaborative portal.

2 Standards and Learning Objects

A number of efforts to develop standards have relevance to our proposed research. We will focus on two very recently published efforts, which define standard properties of learning objects. One standard is the Instructional Management Systems (IMS) Learning Object Metadata (LOM) [5], which is based on the IEEE Learning Technology Standards Committee (LTSC) Learning Object Meta-database [4]. The second standard, a Sharable Courseware Object Reference Model (SCORM) [3], was developed in collaboration with IMS and IEEE LTSC by the Advanced Distributed Learning Initiative (ADL) for the US Department of Defense. Both standardization efforts have built upon previous efforts, resulting in current standards that support a richer set of educational resources than their predecessors. Furthermore several other general standardization efforts, such as the Resources Description Framework Model and Syntax Specification [8] and the Synchronized Multimedia Integration Language [3] from the World Wide Web Consortium are not directed specifically at educational materials but will be important for our project.

IEEE LTSC [4] defines learning object metadata including the specification of properties such as technical and educational properties (such as format and interactivity), meta-metadata, (ownership) rights, relationships (between objects), annotation and classification. IMS [5] has built on this basic metadata, Enterprise properties (such as personal data for students) and a general framework for content re-usability [5].

The ADL SCORM standard is intended to produce "web-available, sharable courseware objects that are reusable in the development of technology-based instruction, portable across different platforms, accessible through the use of metadata standards for identifying and locating them, and durable across different versions of operating systems, browsers, and other supporting software" [3]. The ADL Initiative hopes to provide a starting point for the next generation of advanced learning technologies that can be highly adaptive to student needs. The resulting specifications include a Course Structure Format (CSF), that is an XML-based representation of a course that can be used to describe all course elements, structure and external references necessary to move a course from one learning management system (LMS) to another. Also, they specify a run time environment that includes the specific launch protocol to initiate web-based content, a common content-to-LMS application program interface, and a data model defining the data, which can be exchanged between a learning management system and executable content at run-time. The standard includes metadata for describing the course content, content metadata (which incorporates the IMS Learning Object Metadata core elements) and raw media metadata. Central to SCORM is the concept that courses can be broken up into blocks (collections), objectives, and assignable units (au) that could be combined under the control of an intelligent learning management system. Course completion requirements and pre-requisites are included. The concept of a collection and the flexible assembly of other collections and aus into a new collection is clearly important for building courses from re-useable modules. Within SCORM, assignable units are key building blocks in the overall scheme to track a student's progression through a course. The assignable units contain content and implement the application interface that provides the student progression information needed to customize a learning management system's responses to individual students.

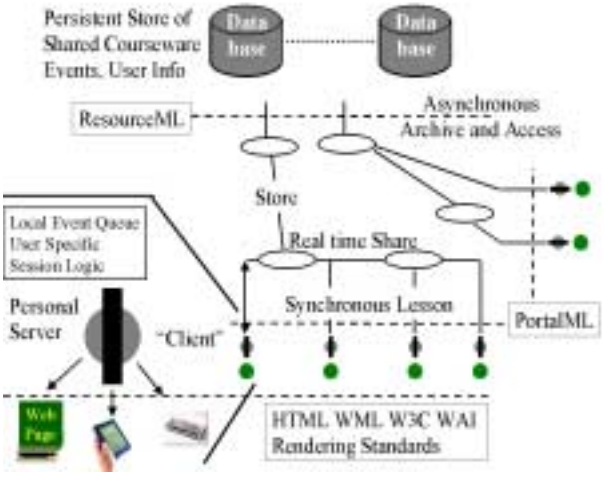


Fig. 5: Collaborative Portal showing support for multiple user interfaces and the event queue shared synchronously as well as being stored for asynchronous access

In our approach, the application interface is encompassed in the client side "user view" interface as shown in Fig. 4. We intend to support more

collaborative flexible learning models than just computer based tutoring on which SCORM tends to focus. Further IEEE LTSC, IMS and SCORM need to be tested in commercial systems such as Blackboard[10], LearningSpace[5] and WebCT[10]. Under the leadership of co-PI Thompson a working group organized by SURA will explicitly examine the exchange of learning objects between these three commercial systems and a compatible XML resource definition will be basis of this.

Thus we see that LTSC, IMS and SCORM provide useful starting points for our project, which is consistent with the curriculum design model of sec. 3.1. We do expect to need to make major extensions in several areas and we will work with the community to ensure that lessons learnt from our project are integrated into the standards activities.

4. Collaborative Portals

It is unrealistic today for any one to build a complete online education environment from scratch: rather one must integrate a system from a variety of different sources. This motivates the standards for re-usable objects described in the previous section.

In this proposal we take an approach that in modern parlance is called an *educational portal*. A portal employs a modern distributed object framework (as discussed in Sec. 4.1 we will evaluate Ninja for this) and uses it to support distributed learning objects and services with the two interfaces defined above. We bring substantial experience in this approach for both computing and education applications and are developing an integrated approach with the NCSA Alliance. We adopt a layered approach with one set of capabilities common to all portals and then specialize to different applications. Here we view a portal as "just" a web interface to a particular application area. [9]

The general properties of any portal include storing, accessing and searching for distributed objects (which of course include web pages) in a repository. Further we have general services such as security and support for collaboration. The latter is particularly important for education as it enables the synchronous or asynchronous interactions between students and teachers. Further general portal capabilities include layout (of the rendered objects on a page), provision of metadata, universal access, user customization and performance (through use of mirror or proxy servers). We will research the use of the client-server interface (see Fig. 4) to define the object properties of relevance to these functions and as usual express them in terms of XML as "portalML". As shown in the SCORM standard, one must support both base educational objects (modules) and their integration into lectures, courses, curriculum etc. We did this with our early WebWisdom system [3] and an attractive interface for this can be seen in commercial software such as RealJukebox [1] which is designed to collect multimedia objects, which are simpler but have interesting points in common with learning objects. This software also supports neat layout customization through different "skins."

Returning to education, one must support special services such as assessment, performance (grading) support, and annotation. There are also distinctive "educational objects" – quizzes, homework, glossaries as well as the curriculum pages with appropriate hierarchical structure. Here we will extend SCORM and IMS but separate the "user view" from the basic resource specification. The latter ("system view") describes the learning modules stored in the shareable courseware repository (see Fig. 2 and Sec. 3). We will of course pay attention to support for key capabilities such as displaying mathematics and other symbolic notations on the Web [4] as well as standards for graphics (Java 3D, VML, X3D etc.). This distributed object based system will have to support curriculum material built in any web authoring system and specified either statically or dynamically (from a database). This simple request turns into a serious challenge, as it requires the unification of services such as those for customization, collaboration, and events. This is a key research area because unified services are essential to the basic strategy for using components from multiple academic and commercial sources. A simpler version of this challenge is well-defined XML interfaces to allow interoperability of data streams.

While our agenda appears daunting and complex, many of the capabilities are provided by the new generation of Internet infrastructure. Therefore for this proposal we can focus on a few key issues. We will assume that new browsers will have satisfactory support for the W3C document object model [11] and XML. This already provides a nice way of specifying collections that is consistent with SCORM. We will build some simple layout tools supporting a portalML [8] allowing natural grid and flow layouts (using a Java AWT notation). We assert that that key new capability shown in fig. 5 is an event service that allows one to receive and send time-stamped tagged messages. These events define the state of each portal page and can be used to support user customization by saving the event queue. The event queue is designed as a distributed (XML) database to support guarantees of robust delivery and performance through replication of shared events. The event log can also be used in assessment of both the student and the learning material as it records the users' interactions with the environment. As discussed in the Syracuse theses of Lee and Sen [8] this can be done server side when

it reduces to the classic analysis of Web Server accesses logs. More interesting is the tracking of client side events where the challenge is basically datamining user relevant information. We will on one hand build in support for this as part of our event service and research extensions of the simple analyses in the two theses to automatically derive user profile and learning assessment information. This client side event information can be used to support universal access as described by Fox and Gilman from the Wisconsin Trace center [13].

Our web-based virtual university approach implies that collaboration is a service that provides the sharing of web-based distributed objects [18]. Previous systems have tended to support either synchronous or asynchronous collaboration modes, but based on our current experience we will unify them for this proposal. Initial synchronous deliveries have had some success using systems like Microsoft NetMeeting, NCSA's Habanero [14] and Syracuse's TangoInteractive [19]. However the new requirements imply we will build collaboration in terms of the event service of our base (Ninja or equivalent) framework. We will allow this to support either synchronous delivery or event archiving and later delivery of a session. Session control will be implemented in XML using the generalized portalML described above [18]. We have found that developing shared animations (for education) is too difficult in current systems like TangoInteractive, which only support complex collaboration-aware applications without difficulties. We will use WNC [15] for an equivalent technology to allow both shared display and collaboration-unaware applications, which are less flexible but much easier to author. One important issue of our research will be the techniques needed to provide this unified approach to collaboration. We are already building examples of this architecture shown in fig. 5 with an event service, which is designed to support the performance of immediate forwarding of object state changes that is needed by synchronous collaboration. This is combined with the archiving of events to support later asynchronous browsing of the course by users accessing the persistent database. We ran in difficulties with TangoInteractive due to its extensive use of browser-based software. In this approach we will avoid putting significant client side logic into a browser but rather use a "personal server." Here we view the browser (on a PC or hand-held device) as one particular rendering device – it contains the code to support rendering but the session logic and important data is controlled client side by a server. This approach is consistent with systems like Ninja and allows a single user session logic to support multiple display devices including cross disability access such as a pure audio rendering for the visually impaired.

One continual area of challenge is the variable quality in digital audio and video conferencing. Higher speed in networking and improving quality of service will address some of the difficulties. We will track the ANL/NCSA Access Grid project [16] at the high end, but for many educational uses commercial systems like RealAudio/Video can be used. In our multi-paradigm framework, we will allow the user to switch dynamically between interactive audio-video technology and the more reliable non real time systems (like RealAudio) whose larger buffer sizes are less sensitive to the lack of quality of service on today's Internet. We have noted in our classes between JSU and Syracuse that we could use the more robust approach when the teacher is lecturing and interacting with the class through the chat rooms rather than the audio channel. This accounts for well over 90% of the time of a typical lecture.

We will use our Gateway computing portal [14] to build a generic portal supporting portalML and resourceML, which will be operational over this summer. This will include a prototype event and layout service and we will use experience from this in evaluating the possible new object web infrastructures discussed in Sec 4.1. We also expect completion of planning for the SURA effort to build an interoperable framework for key commercial systems. This should put us in a good situation at the start of this project to add sophisticated capabilities based on the IMS and SCORM standards needed to support a prototype of the courseware repository. During the initial 6 months of the project we will make simple choices for collaborative services -- perhaps using TangoInteractive or the Access Grid combined with a simple "shared browser." In the spring of 01 we expect to add the key collaborative capabilities based on the event service so that we can start using this research system in our courses starting in the second year of the project. We will expand and evolve his research effort in directions suggested by our experience with the collaborative university.

5. Research Management and Outreach Plan

5.1 Management Plan and Budget

The principal investigator has substantial experience with running large multi-institutional projects funded by NSF and DARPA as both project PI and co-PI. For a project of this size, we intend a *steering committee* containing leaders of technical activities and site representatives. This will discuss and approve major decisions. We will establish an *external review board*, which will review general approach and supply vision and connectivity to national scene. This will help in the qualitative assessment plan of Sec. 3. Initially we intend to work with the NSF PACI EOT to provide the members of and suggestions for the outside review panel. The

operation of the project will have a critical input from an *user's group* of faculty and students which will be initially led by Jackson State University and allow direct input from the involved faculty and students.

The proposed budget is about $6M per year for five years. We see that the need to iteratively develop and assess new curriculum as well as the technology to deliver it, requires the relatively long five-year duration. The budget is split into activities as follows: Technology and Standards $1M, Assessment $1M, Management and meetings $1M and the remainder to courseware development and academic and technical network building.

2. Research Plan

We divide the activities of our project into four broad areas:

a) Infrastructure; administration, workshops, training and facilities.
b) Curriculum development and delivery; assessment (Sections 2 and 3)
c) Technology evaluation, research, standards (Sections 3, 12 and 14)
d) Deployment and support of courseware repository and delivery systems

The project will hold two major working meetings each year. The first one, to be held about 3 months after the start date, will settle on the detailed implementation plans. In the first year we will set up the three groups described in sec. 5, a steering committee, a user group and an external review board. We will ensure during this first year that each HBCU has the necessary distance education infrastructure (computer labs and network connectivity) and staff needed to provide the instructional technology support (area d) above). We will start the faculty and staff training at the end of the first year and continue this in an ongoing fashion. We will develop and offer prototype classes during the first year but the major initial effort will be a curriculum review in each partner institution. This will define computer and computational science focus areas such as software engineering, numerical methods, operating systems etc.

We will evaluate and compare the curricula with respect to both the IEEE/ACM Curricula 01 recommendations and the CSAB/ABET Criteria. As described in sec. 3, 1 the curricula will analyzed in terms of the student acquisition of skills needed by potential employers such as business, industry, and government. We will analyze the currency and relevancy of the curricula and finally identify strengths and weaknesses of the curricula in the HBCU network (sec. 2). This will be compared with a corresponding analysis of the Florida Flexible Lifelong Learning testbed. This will determine which courses are candidates for collaborative development. We expect to find collective strengths and weaknesses as well as particular departments having special needs or capabilities. We will then develop courses for which a need has been identified and which fit well with distance education delivery.

In the first year, we will first identify appropriate initial approaches from existing commercial and academic distance education systems. These will be used in the initial HBCU network delivery. We will combine the HBCU and Florida needs analysis with an object web technology evaluation to provide the detailed plan for the collaborative portal research described in sec 4. This new approach will start to be used in year 2, be extensively deployed in year 3 and be evaluated and refined in years 4 and 5.

Following the initial year's curriculum review, in year 2 the HBCU network will focus on course development and delivery. The assessment process of sec. 3, 2 will provide feedback to course developers, deliverers and the technology group. This iterative feedback will drive the project. Here we expect to start dissemination in a major fashion. Years 3 – 5 will be Iterations of Years 1 and 2 but will add additional testbed schools (from sources described in Sec. 2) and courses. Year 5 will be aimed at capturing all the lessons and organizing our results so they can drive further such efforts. This will be a valid time to gauge the degree of success for the overall project.

3. Dissemination of Results

Dissemination of the results of this endeavor is two-dimensional. In the first dimension, the reusable learning objects (modules) contained in the repository, will be available on the web for use by universities participating in this project as well as universities who learn of the existence of these modules through research publications and presentations. The second dimension includes the publication and presentation of the research including the success and failures of specific modules, findings on the resource and portal research and applications. Conferences targeted for publications include ADMI (Association of Computer and Information Science and Engineering Departments at Minority Institutions), MU-SPIN [7], EDUCAUSE, Journal of Small Colleges [8] and the ACM Special Interest Group on Computer Science Education [1]. As described in detail in sec. 6, 5 we will take advantage of the many contacts of the NSF PACI (NCSA and UCSD partnerships) EOT

(Education Outreach and Training) for further outreach and dissemination. Further as described in the International section, we have in place contacts to ensure an initial exploration of ideas for collaborative university partnerships outside the USA. This has new technical and institutional challenges.

6 Capabilities of the Participating Institutions and Results from Previous NSF Awards

6.1 Florida State University

The principal investigator Geoffrey Fox has moved from Syracuse University (NPAC) to the Department of Computer Science and new School of Computational Science and Information Technology at Florida State and brings substantial experience in both collaboration technology and novel computer science (Internetics) curriculum [23]. The technology and curriculum was developed and delivered as a collaboration between Syracuse, JSU and MSU.

FSU is also represented by the ODDL, which supports distance learning as described in sec [2.2] and the International appendix. Our project will leverage ODDL's existing assessment unit as well as exchanging technology and course modules. ODDL and CSIT combined with a rapid expansion of the FSU computer science department reflect the commitment of FSU to the teaching of Information Technology and its use in all aspects of research and education. Note that in [99] there were [55] courses offered on-line at FSU to a total of [800] students; this statistic is increasing rapidly and excludes "simple web-enhanced" courses

6.1.1 NSF Grant: Center for Research in Parallel Computation

Co-PI Geoffrey Fox (while at Syracuse) CCR-[illegible], $[illegible] in period [illegible]

This Science and Technology grant was led by Ken Kennedy at Rice University and involved research in parallel computing (most recently for Fox concentrating on Java as in [14]) and of particular relevance to this project, several HPCC education activities. Most recently this involves a co-authored book where Fox is coordinating the applications sections. CRPC pioneered a set of collaboratively developed HPC courses at the (then) supercomputer centers where Fox developed several modules. These developed the early internetics ideas [23] and prototypes of education technology later used in DoD work [13]. Fox's work on computing and education portals in the NCSA Alliance (see Sec. [6.5]) is also core to this proposal.

6.2 FAMU

Florida Agricultural & Mechanical University, founded in [18]8, is an HBCU land-grant institution, which educates approximately [12],000 minority students each year. The Computer and Information Science department has a [94]% minority population of approximately [70] undergraduates and [60] graduate students. The department brings expertise in assessment and the use and evaluation of Internet courses. The faculty, Dr. Sara Stoecklin and Dr. Marion Harmon (chair), have been actively involved in the development and review of curriculum and courses at FAMU and other universities during the last [5] years. They have served on university curriculum committees at various levels and on curriculum development boards at universities and industry.

6.2.1 NSF Grant: Software Engineering Research Education Laboratory (SERL)

PI: Dr. Sara Stoecklin Renewed Support: (from previous funding) EIA-[98]00[illegible] for [92]

This Florida A&M University Minority Institution Infrastructure proposal was centered on the enhancement of a major computing facility located within the Department of Computer and Information Science (CIS). While the grant has only been in existence for one-half of an academic year, the results are impressive. The publications ([5] thus far for this new grant), presentations, research projects, research activities, and previous funding successes are fully documented on the web at the address http://www.cis.famu.edu/~simi . . Additionally, FAMU participated in a CREST grant entitled "Center for Distributed Computing: Theory, Application and Practice." This grant, HRD – [98]00[illegible] for [3],000 dollars, has been renewed for the past three years and has [75] publications. The mission of this grant was to develop the infrastructure and inter-disciplinary cooperation that will increase the number of minority students enrolling in and successfully completing masters and Ph.D. degrees in computer science. Successful results are documented at http://www.cis.famu.edu/~crest .

6.3 Jackson State University

Jackson State University is the urban university of Mississippi and enrolls approximately [6],000 students. The primary goal of the School of Science and Technology, and the new School of Engineering, is to develop top quality scientists and engineers who can advance knowledge and address the technical problems facing the nation and the world. Particularly relevant to this proposal, JSU has graduated more African Americans in Computer Science than any other university in the United States. Among African Americans in Mississippi Institutions of Higher Learning, JSU has enrolled [3]% of all Chemistry majors, [4]% of all Biology

majors, 6% of all Computer Science majors, 9% of all Mathematics majors, and 8% of all Physics and Atmospheric Sciences majors. Thus, JSU will continue to provide significant numbers of technical graduates for the current and future workforce.

8 USNSF Grant: Connection to the Internet

PI: W. Brown. Grant from the Division of Advanced Network Infrastructure and Research (Network Infrastructure Program). Award 9 was made on 6 for $80 for 2 months. This new award indicates JSU's readiness to lead the HBCU Collaborative University with a state of the art network connection.

6 Mississippi State University

The original collaboration between Fox, Brown and Thompson was sponsored by the Programming Environment & Training (PET) effort of the DoD Major Shared Resource Centers program - led by the NSF ERC at Mississippi State. It involved regular semester undergraduate and graduate CS courses, which were later, delivered by JSU to other HBCUs – the prototype of our proposed HBCU college network.

As a part of its commitment to an NSF Engineering Research Center (ERC), Mississippi State created a new cross-disciplinary graduate program in Computational Engineering in 9 Computational engineering is an interdisciplinary program across engineering, computer science, and mathematics managed by the College of Engineering and the faculty of the ERC. A goal of the program is cross-disciplinary education that must include study of a computational engineering technology area, numerical mathematics, and high performance computing. A student may earn the M.S. or Ph.D. degrees. Entry into this graduate program can be with a BS degree in any physical or biological science, or in engineering or mathematics. The ERC has also used its research program to enhance undergraduate education at Mississippi State by seriously involving undergraduates in research projects at the Center throughout the academic year, as well as operating a summer REU program for students from other universities and colleges. Since 9 the ERC has awarded assistantship or wage stipends to approximately 7 students to be involved in the research of the Center, with about half being undergraduate students and half being graduate students. Almost all of these students have worked with the research teams of the Center under the direction of a faculty member or a senior graduate student, while others have worked with computing services or publishing in support of the research. In addition, a number of other students have been involved in the research of the Center through special problems, independent study, and activities in courses taught by ERC faculty.

Each year since 9 the ERC has offered a summer internship program supported by funding from the NSF Research Experience for Undergraduates (REU) program. The students come for a ten-week research experience under the mentorship of one of the ERC researchers. Most summers, a few students from Mississippi University for Women and from Jackson State University are included in the program and are supported by other funds.

6 EOT-PACI, the Education, Outreach, and Training Partnership for Advanced Computational Infrastructure

This program seeks to develop human resources through the innovative use of emerging information technologies to understand and solve problems. The participants in this proposal will leverage their relationships with EOT-PACI for general national dissemination of results, increased participation of minority serving institutions, and technical cooperation on educational portals. As part of its dissemination efforts, EOT-PACI maintains a web resource that is nationally visible and used (http://www.eot.org). Roscoe Giles and the Boston University team are responsible for the content of this site and for the development of linked repositories of interest to the computational science education community. As part of this effort, the Boston University team will incorporate courseware components and resources generated by this project into the set of resources at the EOT-PACI site. EOT-PACI is working closely with EDUCAUSE on the Advanced Networking with Minority Serving Institutions (ANMSI, http://www.anms.org) project. The EOT-PACI component of this effort concentrates on making advanced network applications available to MSI participants through workshops, training, and general efforts to be sure that MSI faculty and staff are better represented in the national activities involving advanced network applications such as the Grid Forum and portals organizations. As soon as it is possible, we will incorporate the results of this project into the framework of activities that we offer to MSI's through the ANMSI project. This can serve as an outreach vehicle to additional HBCUs as well as Hispanic Serving Institutions and Tribal Colleges. Allison Clark (NCSA) and R. Giles (BU) are principal contacts for the EOT-PACI ANMSI effort. The joint activities under this proposal will be coordinated through Boston University.

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[3] *Napster* MP3 Distributed shared file system http://www.napster.com

[4] National Center for Education Statistics, http://nces.ed.gov/

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[6] Simonson, M., Smaldino, S., Albright, M. & Zvacek, S. ([0]. *Teaching and learning at a distance* . New Jersey: Prentice-Hall.

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Computational Science and Information Technology
Florida State University
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Tallahassee Florida 32306-4120

Education:
B.A. in Mathematics from Cambridge Univ., Cambridge, England (1967)
Ph.D. in Theoretical Physics from Cambridge University (1967)
M.A. from Cambridge University (1967)

Professional Experience:
2000 Professor of Computer Science, Florida State University
2000 Chief Technologist of Office of Distributed and Distance Learning, FSU
1990 Professor of Computer Science, Syracuse University
1990 Professor of Physics, Syracuse University
1990-2000 Director of Northeast Parallel Architectures Center
1990 Professor of Physics, California Inst. of Tech.
1988-1990 Associate Provost for Computing, California Inst. of Tech.
1988-1990 Dean for Educational Computing, California Inst. of Tech.
1988-1990 Executive Officer of Physics, California Inst. of Tech.
1979-1990 Associate Professor of Physics, California Inst. of Tech.
1974-1979 Assistant Professor of Physics, California Inst. of Tech.
1972-1974 Millikan Research Fellow in Theoretical Physics, Caltech
1971 Visiting Scientist, Brookhaven National Laboratory, Long Island
1969-1972 Research Fellow at Peterhouse College, Cavendish Lab.,Cambridge
1968-1969 Research Scientist, Lawrence Berkeley Lab., Berkeley, Calif.
1967-1968 Member of School of Natural Science, Inst. for Advanced Study,
Princeton, New Jersey

Awards and Honors
Senior Wrangler, Part III Mathematics, Cambridge (1967)
Alfred P. Sloan Foundation Fellowship (1975-77)
Fellow of the American Physical Society (1984)
Journal Editor: Concurrency: Practice and Experience (John Wiley, Inc.)

Selected List of Publications *(5 special to proposal;5 general)*

1. Fox, G. C. "Portals and Frameworks for Web Based Education and Computational Science," Proceedings of the Second International Conference on the Practical Application of Java, Editor Omer Rana, Manchester England April 2000 http://www.practical-applications.co.uk/PAJAVA2000/index.html and http://www.new-npac.org/users/fox/documents/pajavaapril00
2. Erol Akarsu, Geoffrey Fox, Tomasz Haupt, Alexey Kalinichenko, Kang-Seok Kim, Praveen Sheethaalnath, and Choon-Han Youn, Using Gateway System to Provide a Desktop Access to High Performance Computational Resources, Proceedings of HPDC-8 Conference, Redondo Beach Ca., Aug 3-6, 1999 IEEE Press. http://www.osc.edu/~kenf/theGateway/ and http://www.npac.syr.edu/users/haupt/WebFlow/
3. Fox, G. "Internetics: Technologies, Applications and Academic Fields" Invited Chapter in Book :Feynman and Computation," edited by A.J.G. Hey, Perseus Books (1999)

4 Fox, G., Scavo T., Bernholdt D., Markowski R., McCracken N., Podgorny M., Mitra D. and Malluhi Q., "Synchronous Learning at a Distance: Experiences with TangoInteractive," in Proceedings of SC'99, Orlando, November 1999.
5 Fox G.C., and Podgorny M, "Real Time Training and Integration of Simulation and Planning using the TangoInteractive Collaborative System," in Proceedings of International Test and Evaluation Workshop on High performance Computing, July 1998, Aberdeen Maryland.
6 Fox, G.C., Akarsu E., Furmanski W., Haupt T., "WebFlow -- High-level Programming environment and Visual Authoring Toolkit for High Performance Distributed Computing" in Proceedings of SC'98, Orlando, November 1998.
7 Fox, G., Bozkus, Z., Choudhary, A., Haupt, T., and Ranka, S. "A compilation approach for Fortran 90D/HPF compilers on distributed memory MIMD computers," in Proceedings of the Sixth Annual Workshop on Languages and Compilers for Parallel Computing. Lecture Notes in Computer Science, Springer-Verlag, pp. 200-215. U. Banerjee, D. Gelernter, A. Nicolau, and D. Padua (editors).
8 Fox, G.C., Messina, P., Williams, R., Parallel Computing Works!, Morgan Kaufmann, San Mateo Ca, 1994.
9 Fox, G.C. "Parallel Computing and Education," Daedalus, Journal of the American Academy of Arts and Sciences, Vol. 121, No. 1, pps 125-148, Winter 1992. SCCS-9, CRPC-TR92.
10 Fox, G.C., Johnson, M.A., Lyzenga, G.A., Otto, S.W., Salmon, J.K., Walker, D.W., Solving Problems on Concurrent Processors, Vol. 1, Prentice-Hall, Inc. 1988, Vol. 2, 1990.

Summary of Interests

Fox has worked in a variety of applied computer science fields with his work on computational physics evolving into contributions to parallel computing initially involving the hypercube architecture. He has worked on the computing issues in several application areas – currently focusing on Earthquake Science. Over the last three years, his major activity has been the use of Object Web technologies to build collaboration systems and their application in an integrated approach to synchronous and asynchronous distance education. He has led activities to develop prototype high performance Java and Fortran compilers and their runtime support. His research group has pioneered use of CORBA and Java for both collaboration and distributed computing. He helped set up the Java Grande forum to encourage use of Java in large-scale computations. Fox is a proponent for the development of computational science and its follow on "Internetics" as an academic discipline and a scientific method.

Collaborators

Bernholdt David, Syracuse University; Bogucz, Ed, Syracuse University; Brown Willie, Jackson State University; Browne, Jim, University of Texas; Chen, Marina, Boston University; Dennis, Larry, FSU; Dennis, John, Rice University; Dragovitsch, Peter, FSU; Dongarra, Jack, University of Tennessee; Douglas, Ian, FSU; Foster, Ian, Argonne National Laboratory; Gannon, Dennis, Indiana University; Gates, Roscoe, Boston University; Geman, Al, (private consultant); Hariri, Salim, University of Arizona; Hayes, Carole, FSU; Keller, Herb, Caltech; Kennedy, Ken, Rice; Lacher, Chris, FSU; Lathrop, Scott, UIUC; Lipson, Ed, Syracuse University; Malluhi Q., Jackson State University; Matzner, Richard, University of Texas; Meiron, Dan, Caltech; Messina, Paul, Caltech; Mitra D., Jackson State University; Podgorny Marek, Syracuse University; Ranka, Sanjay, University of Florida; Reed, Dan, UIUC; Spina, Eric, Syracuse University; Stoecklin, Sara, FAMU; Stevens, Rick, Argonne; Taylor, Steve, Syracuse University; Turner, James, FSU; Thompson, Joe, Mississippi State University; von Laszewski, Gregor, Argonne; Wheeler, Mary, Texas; White, Andy, Los Alamos

Thesis Advisor: Eden, Richard, Cambridge University

Biography – Robert Christopher Lacher

a. Professional Preparation

B.S. (Mathematics), University of Georgia, 1969
M.A. (Mathematics), University of Georgia, 1971
Ph.D. (Mathematics), University of Georgia, 1974 Major Professor: James C. Cantrell;
Dissertation: Some Conditions for Manifolds to be Tame

b. Appointments

Director (Acting), FSU Office for Distributed and Distance Learning, July 1999 – present
Chair, FSU Department of Computer Science, 1994 – 1997 1998 – 1999
Professor (Computer Science), Florida State University, 1989 – present
Professor (Mathematics), Florida State University, 1985 – present
Visiting Professor (Mathematics), University of Warwick, Coventry, England, summer, 1982
Member, Institute for Advanced Study, Princeton, New Jersey, Spring, 1982
Associate Professor (Mathematics), Florida State University, 1977 – 1985
Assistant Professor (Mathematics), Florida State University, 1974 – 1977
Research Scientist, Institute for Defense Analyses, Communications Research Division, summer, 1968
Member, Institute for Advanced Study, Princeton, New Jersey, 1968 – 1969
Research Instructor and Assistant Professor, University of California, Los Angeles, 1966 – 1968

c. (i) Selected Recent Publications (most closely related to proposal)

R.C. Lacher and D.W. Sumners, Data structures and algorithms for computation of topological invariants of entanglements: Link, Twist, and Writhe, *Computer Simulation of Polymers* (R.J. Roe, ed.), Prentice Hall, Englewood Cliffs, NJ, 1993.

Allan Egbert, Jr, and R.C. Lacher, Building EMYCIN expert systems from raw data sources , *Proceedings International Conference on Artificial Intelligence*, CREA Press, Las Vegas, 1999 pp 375

Cristi Cole, R.C. Lacher, Ernest L. McDuffie, Constance A. Buenafe, and Chris W. Baumgart, The adaptive multi-sensor security system, AMISS, *Proceedings International Conference on Artificial Intelligence*, CREA Press, Las Vegas, 1999 pp 457

R.S. Renner, B.A. Juliano, and R.C. Lacher, A simulation tool for managing intelligent ensembles, *Proceedings International Conference on Artificial Intelligence*, CREA Press, Las Vegas, 1999 pp 783

Allan Egbert, Jr, and R.C. Lacher, Pipelining machine learning algorithms for knowledge discovery, SPIE/AeroSense *Data Mining and Knowledge Discovery Conference* , April 2000, Orlando, Florida (to appear).

c. (ii) Selected Recent Publications (general)

R.C. Lacher, J.L. Bryant, and L.N. Howard, A model for the asymptotic behavior of loop entanglement in a constrained liquid region, *J Chem. Phys.* 83 (1985).

R.C. Lacher, Loop entanglement in a constrained liquid region: simulation data, simplified models, and general measurement heuristics, *Macromolecules* 21 (1988).

R.C. Lacher and J.L. Bryant, Molecular weight dependence in Flory's theory of crystallization of copolymers, *J Chem. Phys.* 79 (1983).

R.C. Lacher, S.I. Hruska, and D.C. Kuncicky, Backpropagation learning in expert networks, *IEEE Transactions on Neural Networks* 3 (1) (1992).

R.C. Lacher, Expert Networks: Paradigmatic conflict, technological rapprochement, *Minds and Machines* 3 (1993).

d. Synergistic Activities

Founding member of the Board of Directors of Tallahassee FreeNet (TFN). Founded in 1989, TFN was the first public Internet service provider in Florida. TFN thrives today, and it is still free. See http://www.tfn.net .

Lead architect of the new computer science/software engineering Bachelors degree curricula at FSU. See http://www.cs.fsu.edu/academics/ugrad/ugbulletin.html .

Lead architect of the FSU three-layer flexible delivery model.

Lead developer of the FSU distance education program in computer science and software engineering. See http://www.fsu.edu/distance .

Lead faculty member developing and offering the new course COP 5938, *Data Structures, Algorithms, and Generic Programming*, designed for the flexible 3-layer delivery system (IPO Fall 2001).

e.(i) Collaborators

Susan I. Bassett (aka Susan I. Hruska), Bioreason, Inc.
Chris W. Baumgart, Allied Signal Corp.
Constance A. Buenafe, Allied Signal Corp.
Allan Egbert, Eze-Castle Communications, Boston
Cristi Ciancarelli, Sterling College, Sterling, KS
Benjo A. Juliano, California State University, Chico
D.A. Kotter, FSU Department of Meteorology
David C. Kincicky , Bioreason, Inc.
Keith D. McCroan, US Environmental Protection Agency NAREL Environmental Radiation Laboratory
Ernest L. McDuffie, FSU Department of Computer Science
Kazunari Narita, Diado Steel Corp.
H.D. Nguyen, IBM Corp.
Renee S. Renner, California State University, Chico
B. Yoon , Department of Computer Science, Myong-Ji University, Seoul, Korea.
Lili Yan (affiliation unknown)

e.(ii) Major professor: James C. Cantrell, Professor of Mathematics, University of Georgia (retired)

e.(iii) Students and Advisees

PhD Graduates: total 8 graduated, 1 current (Cristi Ciancarelli); last 5 years:

Lilly Yan (PhD April, 1999), unknown affiliation

Renee Renner (PhD April, 1999), currently Assistant Professor of Computer Science, California State University, Chico, CA. See http://www.ecst.csuchico.edu/~renner .

Larry Weinstein (PhD December, 1999), currently in his second startup: BitPlayer, a 3D Multimedia Entertainment Company. See http://www.bitplayer.net .

Cristi Ciancarelli (ABD), currently Professor of Computer Science, Sterling College, Sterling, KS

MS Graduates: total 3 graduated; last 5 years:

Bumghi Choi (1999), Dennis Shores (1999), Robert Eger (1999), Anne Schwartz (1998), James Caldwell (1998), Michelle Taylor (1998), Ken Baldauf (1998), Justin Lloyd (1998), Brock Stitts (1998), Allan Egbert (1999)

Willie G. Brown Assistant Vice President for Information Technology
Jackson State University
P. O. Box 17
Jackson, MS 39

Institution and Location	Degree	Years	Field of Study
Wayne State University Detroit, MI	B.A.	1988	Computer Science
Wayne State University	M.S.	1989	Computer Science
Wayne State University	Ph.D.	1994	Computer Science

EXPERIENCE

1998 - Present Associate Professor, Department of Computer Science, Jackson State University, Jackson, MS.
1999 - Present Assistant Vice President for Information Technology, Jackson State University, Jackson, MS.
1997 - 1999 Chair, Department of Computer Science, Jackson State University, Jackson, MS.
1994 - 1998 Assistant Professor of Computer Science, Jackson State University, Jackson, MS.
1992 - 1994 Consultant, Ford Motor Company, Allen Park, MI.
1989 - 1992 Graduate Teaching Assistant, Wayne State University, Detroit, MI.
1990 - 1991 Analyst, Mount Clemens General Hospital, Mount Clemens, MI.
1988 - 1990 Research Assistant, Wayne State University, Detroit, MI.

PUBLICATIONS

E. J. Kaminsky, H. Barad, W. G. Brown, "Textural Neural Network and Version Space Classifiers for Remote Sensing," *International Journal of Remote Sensing*, Vol. 18, No. 4, 1997, pp. 741-762.

D. Mitra, W. G. Brown, "Two Orthogonal Sub-Algebras of the Interval Algebra," *Proceedings of the Tenth International IEEE/AIE Conference*, Atlanta, GA, June 1997.

Q. Malluhi, G. S. Jung, W. G. Brown, "A Scheme for High Performance Data Delivery Service in the Web Environment," *Proceedings of the International Conference on Parallel and Distributed Systems*, National Cheng-Kung University, Tainan, Taiwan, ROC, December 1996.

SIGNIFICANT ACTIVITIES

JSU Computer Science Department Accreditation

JSU's Computer Science Department was denied accreditation by the Computer Science Accreditation Committee (CSAC) of the Computing Sciences Accreditation Board (CSAB) in 1998. The department, with Dr. Brown as the newly appointed Chair, re-applied for accreditation in 1999. Under Dr. Brown's direction, a complete curriculum review was performed and major curriculum changes were implemented (course additions, deletions, and modifications). Dr. Brown organized and used a curriculum committee consisting of internal (faculty) and external (business, government, and other universities) membership to revamp the Computer Science curriculum. JSU's department was re-accredited using the new curriculum.

CSC 9 Image Interpretation – Fall Semester 9

Dr. Brown taught this Ph.D. level course using the Web-based Remote Sensing Core Curriculum, http://www.research.umbc.edu/~benja/1

DoD High Performance Computing Modernization Program
Programming Environment and Training

Dr. Brown coordinates the web-based distance education project between JSU and Syracuse University. The following technical reports describe project experiences (Drs. Malluhi and Mitra are JSU Computer Science department faculty members):

T. Scavo, D. E. Bernholdt, G. C. Fox, R. Markowski, N. J. McCraken, M. Podgorny, D. Mitra, "Synchronous Learning at a Distance Experiences with TANGO," *Technical Report 829*, U.S. Army Corps of Engineers' Engineering Research and Development Center (ERDC), Vicksburg, MS.

Geoffrey C. Fox, Romar Markowski, Nancy J. McCracken, Marek Podgorny, Qutaibah Malluhi, Debasis Mitra, "More Experiences with TANGO Interactive in Synchronous Distance Learning Courses," *Technical Report 92* , U.S. Army Corps of Engineers' Engineering Research and Development Center (ERDC), Vicksburg, MS.

CURRENT AND FORMER STUDENTS

Name	Affiliation
Barad, Herb	Intel Corp.
Jung, G. S.	Jackson State University
Kaminsky, Edit J.	Tulane University
Malluhi, Q.	Jackson State University
Mitra, D.	Jackson State University

OTHER THESIS REVIEWS

Frederick Wilson	NASA Goddard Space Flight Center

OTHER THESIS REVIEWS

Robert Reynolds	Wayne State University

Shirl R. Byron
5901 Wakehurst Way-Baltimore, Maryland MD 21239-Home: 410-435-18881-Work: 443-885-3745.

EDUCATION

Master of City and Regional Planning
UNIVERSITY OF PENNSYLVANIA, Philadelphia PA
June 1972

Bachelor of Arts in Political Science
MORGAN STATE COLLEGE, Baltimore, MD
June 1970

EXPERIENCE

MORGAN STATE UNIVERSITY, Baltimore, MD
Assistant Professor and Associate Director August 1997-May 1999
Assistant Professor and Program Coordinator August 1992-August 1997
Taught selected graduate courses. Responsible for the academic program, accreditation requirements, recruiting activities, student advising and professional development. Managed promotions for the Institute, funding and proposal opportunities.

COUNCIL FOR ECONOMIC BUSINESS OPPORTUNITY, INC., BALTIMORE, MD
Community Economic Director October 1990-August 1992
Provided economic technical assistance to community organizations as part of urban revitalization efforts.

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT, BALTIMORE, MD
Urban Planning/Special Assistant July 1989-October 1990
Responsible to the Commissioner and represented his office in all commercial revitalization activities in the neighborhood shopping districts.

Urban Planning/Director May 1984-July 1989
Supervised the design and community economic development of a staff of eight design and planning professionals.

Urban Planning/Planner 1972-1984

Responsible for resident community participation and for developing the renewal and revitalization plans for over a dozen neighborhoods in Baltimore City.

PUBLICATIONS

"Neighborhood Commercial Revitalization, A Commentary," Department of Urban Studies and Planning, Virginia Commonwealth University, Summer 1987.

"The Changing Industrial City," National Endowment of the Arts, Mayor's Institute on City Design: April 1994.

"Baltimore Unbound: A Strategy for Regional Renewal", Review for the Journal of the American Planning Association, Autumn 1996. Vol. 62, 4:532.

"Undercrowding Baltimore", The Urbanite Vol. 4, Number 5, May1997.

Lawrence C. Dennis
February 23, 2000

Department of Physics
Florida State University
Tallahassee, FL, 32306-3016
WWW URL: http://www.csit.fsu.edu/ dennisl/

Fax: (904)644-0098
Phone: (904)644-7052
e-mail: dennisl@csit.fsu.edu

EDUCATION:

Ph.D.	University of Virginia	1979	Nuclear Physics
B.S.	University of Michigan	1974	Physics

EXPERIENCE:

Assoc. Director for Education	School of Computational Science & Information Technology, January 2000 - present	Florida State University
Professor	Department of Physics August 1990 - present	Florida State University
Associate Professor	Department of Physics August 1985 - July 1990	Florida State University
Assistant Professor	Department of Physics August 1980 - July 1985	Florida State University
Research Associate	Department of Physics July 1979 - July 1980	Florida State University

AWARDS:

1997	Teaching Incentive Program Award	Florida State University
1995	COFRS Award	Florida State University
1994	Teaching Incentive Program Award	Florida State University
1992	University Teaching Award	Florida State University
1986	Developing Scholar Award	Florida State University
1984	COFRS Award	Florida State University

RESEARCH ACTIVITIES:

My research program includes nuclear physics experiments at the Thomas Jefferson National Accelerator Facility (TJNAF), distributed computing applications for nuclear physics and distributed large scale scientific databases. The experiments focus on the determination of the role of strange quarks in nuclei. I have published 51 papers in refereed journals and supervised 7 graduate and 25 FSU undergraduate students who have assisted with this research. Funding for the research in nuclear physics and computing comes from the US National Science Foundation and the US Department of Energy.

PROFESSIONAL ACTIVITIES:

1996-1997	Past-Chairman	TJNAF* Users Group Board of Directors
1996-present	Member	Leon Assoc. for Science Teaching, Board of Directors
1989-present	Technical Representative	TJNAF Large Acceptance Spectrometer Software Working Group
1995-1996	Chairman	TJNAF Physics Computing Advisory Committee
1995-1996	Chairman	TJNAF Users Group Board of Directors
1994-1995	Chairman-elect	TJNAF Users Group Board of Directors
1991-1996	Member	Odyssey Science Center, Board of Trustees
1990-1995	Chairman	Education Committee, Odyssey Science Center
1990-1995	Spokesman	TJNAF Large Acceptance Spectrometer Collaboration

* U.S. Department of Energy, Thomas Jefferson National Accelerator Facility, Newport News, Va.

Lawrence C. Dennis

February 23, 2000

Representative Publications

1. *High momentum transfer $R_{T,L}$ inclusive response functions for $^{3,4}He$*, Z.-E. Meziani, J. P. Chen, D. Beck, G. Boyd, L.M. Chinitz, D.B. Day, L.C. Dennis, G.E. Dodge, B.W. Fillipone, K.L. Giovanetti, J. Jourdan, K.W. Kemper, T. Koh, W. Lorenzon, J.S. McCarthy, R.D. McKeown, R.G. Milner, R.C. Minehart, J. Morgenstern, J.Mougey, D.H. Potterveld, O.A. Rondon-Aramayo, R.M. Sealock, I. Sick, L.C. Smith, S.T. Thornton, R.C. Walker, and C. Woodward, Phys. Rev. Lett. **96**, (1992) 41.

2. *Longitudinal and transverse response functions in $^{56}Fe(e,e')$ at momentum transfer near 1 GeV/c*, J. P. Chen, Z. E. Meziani, D. Beck, G. Boyd, L. M. Chinitz, D. B. Day, L. C. Dennis, G. Dodge, B. W. Filippone, K. L. Giovanetti, J. Jourdan, K. W. Kemper, T. Koh, W. Lorenzon, J. S. McCarthy, R. D. McKeown, R. G. Milner, R. C. Minehart, J. Morgenstern, J. Mougey, D. H. Potterveld, O. A. Rondon-Aramayo, R. M. Sealock, L. C. Smith, S. T. Thornton, R. C. Walker and C. Woodward, Phys. Rev. Lett. , **66** (1991) 1283.

3. *Electroexcitation of the $\Delta(1232)$ in nuclei*, R. M. Sealock, K.L. Giovannetti, S.T. Thornton, Z. E. Meziani, O. A. Rondon-Aramayo, S. Auffret, J. P. Chen, D.G. Christian, D.B. Day, J. S. McCarthy, R. C. Minehart, L. C. Dennis, K. W. Kemper, B. A. Mecking and J. Morgenstern, Phys. Rev. Lett. **62**(1989)1350.

4. *An object-based conceptual model of a nuclear physics database*, B.K. Ehlmann, L.C. Dennis and G.A. Riccardi, Nuclear Instruments and Methods **A325** (1993) 294.

5. *PVMGEANT - A Parallel Simulation Code for the CLAS Detector at CEBAF*, P. Dragovitsch, X. Zhao, L.C. Dennis and G. Riccardi, Supercomputer Applications, MIT Press, 9, 1995.

6. *High performance simulations of the CEBAF Large Acceptance Spectrometer on distributed computers*, X. Zhao, P. Dragovitsch, L.C. Dennis, G. Riccardi and M. Guidal, Nuclear Instr. and Meth., (submitted).

7. *Total cross section measurements of $^{16}O + ^{232}Th$ incomplete fusion followed by fission at 140 MeV*, E.P. Gavathas, A.D.Frawley, R.C.Kline, and L.C. Dennis, Phys. Rev. C **C51** (1995) 651.

8. *Resonant characteristics of statistical fluctuations in the ^{12}C + ^{12}C reaction cross sections* , D. L. Gay and L. C. Dennis, Phys. Rev. **C47** (1993) 387.

9. *Complete and incomplete momentum transfer components in the $^{nat}Si(^{16}O,X)$ reaction at 96, 112 and 128 MeV bombarding energies*, R. A. Zingarelli, L. C. Dennis, M. Tiede, R. C. Kline, S. V. Mitchell, and K. W. Kemper, Phys. Rev. **C48** (1993) 651.

10. *Energy dependence of fusion evaporation-residue cross sections in the ^{28}Si + ^{12}C reaction*, M.F. Vineyard, J.F. Mateja, C. Beck, S.E. Atencio, L.C. Dennis, A.D. Frawley,, D.J. Henderson, R.V.F. Janssens, K.W. Kemper, D.G. Kovar, C.F. Maguire, S.J. Padalino, F.W. Prosser, G.S.F. Stephans, M.A. Tiede, B.D. Wilkins and R. A. Zingarelli, Phys. Rev. **C47** (1993) 387.

Graduate Students Supervised

Steve Padalino	Ph.D. 1985	Ron Parker	Ph.D. 1987	Ken Sartor	Ph.D. 1988
Rob Zingarelli	Ph.D. 1990	Richard Kline	Ph.D. 1993	Maria Stewart	MS 1996
Simeon McAleer	Ph.D. Candidate				

Collaborators:

Collaboration Name	Online List of Members
CLAS Collaboration	see http://www.physics.odu.edu/ dodge/memb/lists.html
Hall D Collaboration	see http://dustbunny.physics.indiana.edu/HallD/Collaboration.html

Biographical sketch of Ian William Douglas

Professional Preparation

Aug 1980 to May 1984	University of Glasgow, UK	M.A.(hons) Psychology
Aug 1984 to Sept 1985	University of Warwick, UK	M.Sc. Computing and Cognition
Oct 1985 to Jan 1990	Glasgow Caledonian University, UK	Ph.D. Computer Science

Appointments

Oct 1998 to present	Computer Science and the Learning System Instiute Florida State University.	Assistant Professor/ Assistant Program Director
Feb 1996 to Sept 1998	Interactive Systems Section, School of Information Technology and Applied Sciences, Temasek Polytechnic, Singapore.	Section Head
Jun 1994 to Feb 1996	Department of Computing, Glasgow Caledonian University, UK	Senior Lecturer
Jan 1993 to Sept 1994	British Open University (part-time).	Tutor and Graduate Supervisor
July 1990 to Jun 1994	Department of Computing, Glasgow Polytechnic, UK	Lecturer
Jan 1988 to Jan 1990	Interactive Training Systems, Rediffusion Simulation Ltd., Crawley, UK	Technology-Based Training Consultant
Dec 1984 to Jan 1988	School of Engineering and Applied Sciences, University of Sussex, UK	Research Assistant

Five publications most closely related to the proposed project

"Systems, Tasks and Perspectives: redefining the importance of technology in enhancing learning." To appear this summer in a Special Issue of the International Journal of Continuing Engineering Education and Life-Long Learning (IJCEELLL, a UNESCO journal) on the theme "Internet-based learning and the future of education."

"Learning object-oriented software design at a distance." Proceedings of the IEEE frontiers in education conference, San Juan, Puerto Rico, November 1999, p. 12a7 (1999).

"Talking head videos: using a task-based approach to enrich perspectives on knowledge." Proceedings of the 8th International Conference on Technology and Education, Tampa, October, (1998).

"Using Interactive Notes With Web-based Learning." Joint paper with Graham, C. and Yew H.K. Proceedings of the International Conference on Computers in Education '98, p. 842 (1998).

"Simulated Interviewing For Technical Language Learning." Joint paper with Graham, C. Proceedings of the International Conference on Computers in Education '97, pp. 443-450 (1997). A version of this paper was also presented at a conference on IT in English language learning held in Singapore, Sept (1997).

Five other significant publications

"The use of simulation techniques to encourage creativity in interface design." Proceedings of the first Asia Pacific conference on computer human interaction. Singapore, pp. 22 June (1996).

"An agent based infrastructure for co-operative building design." Joint paper with Cherif Branki & Quentin Mair. Artificial intelligence in design '96 (1996).

"Intelligent Agents in co-operative design and planning." In.: Moving Towards Expert Systems Globally in the 21st Century. 1st ed. Vol. 1 Proceedings of the Second World Congress on Expert Systems, Lisbon. Editor: Liebowitz, J., (1994).

"The essence of multimedia." Invited presentation. Proceedings of Hypermedia '94 pp. 22 Vaasa, Finland (1994) Conference organised by the European society for engineering education.

"Training on complex equipment using graphical simulations in a hypermedia environment." Proceedings of the Hypermedia '94 pp. 17 Vaasa, Finland (1994) Paper received award for the presentation of most innovative application of multi-media.

Synergistic Activities

Development of one of the first human factors testing and training centers in Asia. Designed, specified and managed the center, which was used to teach students usability testing. The center was also used by Motorolla to test new pager designs for the Asian market (1994).

Involved in the curriculum development commitees of seven degree and diploma programs.
This included leading the the development of one of Europe's first masters programs in multimedia computing and one of Asia's first diploma programs in Internet computing (1998 to present).

Involvement in the setting up of a large scale distance learning initiative at FSU. Including the development and delivery of one of the first courses, COP 3330 Object-Oriented Analysis and Design. The course includes a dedicated web site and a detailed study guide and CD-ROM (1999 to present).

Developed a system of education to encourage problem-based learning using interactive notes with a course web site. The system received an educational innocation award in Singapore (1998).

Initiation of a development program for Russian educators funded through the Nuffield foundation (1994).

Collaborators & Other Affiliations

Connor Graham	Universtiy of Swinborne, Australia
Yew Hon Kong	Temasek Polytechnic, Singapore

Graduate advisors:	Geoff Cartwright	Glasgow Caledonian University
	Jim Hunter	University of Aberdeen

Twelve graduate students advised

Peter Dragovitsch
Biographical Sketch

Contact:

Office for Distributed and Distance Learning
The Florida State University
C3524 University Center
Tallahassee, FL 32306-2540
Phone: 850.645.0392
Facsimile: 850.644.5803
E-Mail: pdragovitsch@oddl.fsu.edu

Personal:

Born February 13, 1959. Married. Resident alien.

a. Professional Preparation:

- Undergraduate: University of Köln, Cologne, Germany, Physics, B.S (Vordiplom),1980
- Graduate: University of Köln, Köln, Cologne, Germany, Physics, M.S. (Diplom),1984
- University of Köln, Köln (Cologne), Germany, Physics, Ph.D. (Dr. rer. nat.), 1987
- IKP, Forschungszentrum Jülich (KFA), Jülich, Germany, Computational Physics ,1987-1990

b. Appointments:

- Since 1999: Florida State University, Office for Distributed and Distance Learning, Tallahassee, USA (Coordinator Special Projects)
- Since 1995: Florida State University, Departments of Physics and Mathematics, Tallahassee, USA (Instructor)
- Since 1990: Florida State University, Supercomputer Computations Research. Institute "SCRI" (now: School of Computational Sciences and Information Technology, "CSIT"), Tallahassee, USA (Research Scientist in Nuclear Physics)
- 1987-1990: Forschungszentrum Jülich (KFA), Institute for Nuclear Physics (IKP), Jülich, Germany (Postdoctoral Researcher)
- University of Köln, Institute for Nuclear Chemistry, Köln (Cologne), Germany (Research Assistant)

c) Publications:

- P. Dragovitsch, X. Zhao, L. Dennis, and G. Riccardi, "PvmGeant - a Parallel Simulation Code for the CLAS Detector at Jefferson Lab," *International Journal of Supercomputer Applications, Vol.* ***9,*** *No. 2, 128-137 (1995)*
- R. Michel, M. Gloris, H.-J. Lange, I. Leya, M. Lüpke, U. Herpers, B. Dittrich-Hannen, R. Rösel, Th. Schiekel, D. Filges, P. Dragovitsch, M. Suter, H.-J. Hofmann, W.Wölfli, P.W. Kubik, H. Baur, R. Wieler, "Nuclide Production by proton-induced reactions on elements (6<Z<29) in the energy range from 800 to 2600 MeV," *Nucl. Instr. and Methods in Physics Research* ***B 103*** *(1995) 183-222.*

- L.Dennis and P.Dragovitsch "Simulation and Data Analysis Software for the CLAS Detector," in: *Proceedings of the International Conference on Monte Carlo Simulation in High Energy and Nuclear Physics 1993 - MC93, P.Dragovitsch, S.Linn, M.Burbank (eds.), World Scientific Publishers, (1994), ISBN 981-02-1621-1*
- P. Dragovitsch, P. Cloth, D. Filges, Ch. Reul, W. Amian, M.M. Meier, "Intranuclear Cascade -- Evaporation Model Predictions of Double Differential Cross Sections A(p,xn) Neutron Cross Sections and Comparison with Experiments at 318 and 800 MeV Proton Energy," *JUEL - 2295, August 1989*
- G. Korschinek, H. Morinaga, E. Nolte, E. Preisenberger, U. Ratzinger, P. Dragovitsch, S. Vogt, "Accelerator Mass Spectroscopy with Completely Stripped ^{41}Ca and ^{53}Mn Ions at the Munich Tandem Accelerator", *Nuclear Instruments and Methods in Physics Research **B 29**, (1987) 67.*

d) Synergistic Activities

- Creation and development of Web-delivered (MAP3305) and Web-enhanced courses (PHY6938, PHY4936, MAP3305, MAP3306) for FSU Departments of Physics and Mathematics: 1995-2000.
- Invention of a secure electronic instrument for students assessment of instruction (eSUSSAI); a modified version available for general evaluation purposes: 1999, 2000.
- Creation of numerous web-based applications for collaboration and education (e.g. instructor-push slide shows, passive slide shows, interactive lecturing-tools, e-mail-based news forums, discussion boards, collaboration management tools): 1993-2000.
- Implementation and in-vitro testing of Blackboard™ CourseInfo Enterprise Edition versions â, 1.0, and 2.0 (1999, 2000)
- Development of a large scale (150Terabyte/year) data-monitoring, -acquisition, -management, -analysis, and -simulation system for the CLAS Detector at Jefferson Lab, Newport News, VA (with the CLAS software group), 1990-1998

e) Collaborators and other Affiliations

(i) ***A1*** *Collaboration*, MAMI, Mainz, Germany; *Brown*, Willie, Jackson State University; ***CLAS*** Collaboration (140+ members), Jefferson Lab, Newport News, VA; *Dennis*, Lawrence, FSU CSIT and FSU Dept. of Physics; *Douglas*, Ian, FSU LSI and FSU Dept. of Computer Science ;*Fox*, Geoffrey, FSU CSIT and FSU Dept. of Computer Science; *Fusaro*, Bernard, FSU Department of Mathematics; *Giles*, Roscoe, Boston University; *Hayes*, Carole, FSU ODDL; ***Hall D*** Collaboration, Jefferson Lab, Newport News, VA; *Lacher*, Robert C., FSU ODDL; *Lupton*, William, Morgan State University; *Monroe*, Joseph, North Carolina A&T State University; *Riccardi*, Gregory, FSU Dept. of Computer Science; *Sarty*, Adam, FSU Dept. of Physics; *Stoecklin*, Sara, Florida A & M University; *Thompson*, Joe, Mississippi State University; *Turner*, James, FSU;*Young*, Eutiquio, FSU Dept. of Mathematics

(ii) N.A.

(iii) Xuwei Zhao (post-doc), Stephen Barrow (post-doc)

ROSCOE C. GIES

Professor, Department of Electrical and Computer Engineering,
College of Engineering, Boston University, Boston Massachusetts, 02215
(617) 353-9530 EMAIL: roscoe@bu.edu, URL: http://roscoe.bu.edu

Professional Employment

1998 -Present Professor, Department of Electrical, Computer and Systems Engineering, College of Engineering, Boston University.

1997 -1998 Assistant Professor, Department of Physics and Center for Theoretical Physics, Massachusetts Institute of Technology

1996 -1997 Post-Doctoral Fellow, Center for Theoretical Physics, Massachusetts Institute of Technology.

1994 -1996 Post-Doctoral Fellow, Theoretical Physics Group, Stanford Linear Accelerator Center (SLAC)

Education

Ph.D.,	Physics	Stanford University, 1994
M.S.,	Physics	Stanford University, 1991
B.A. Honors,	Physics	University of Chicago, 1987

Honors and Fellowships

Computing Research Association, A. Nico Haberman Distinguished Service Award, July 2000
Faculty Service Award, Boston University College of Engineering, 1996
DOE Undergraduate Computational Science Award, DOE, 1999
DOE Undergraduate Computational Science Award for "Introduction to Parallel Computing Course," 1999
Boston University Scholar–Teacher of the Year 1998-1999

Professional and Research Interests

My research focuses on the application of high performance and parallel computing to physics and materials problems. I have developed parallel algorithms for large scale micromagnetic modeling and molecular dynamics simulations.

As an outgrowth of these computational science research efforts, I have become committed to prototyping and building computational and educational infrastructure that will enable broad participation of scholars and students in high performance computing. As a co-PI on the NCSA Alliance (an NSF Partnership for Advanced Computational Infrastructure), I head the Education, Outreach, and Training teams of the Alliance and am part of the Leadership Team for the National EOT-PACI effort.

Selected Publications

Raquell M. Holmes & Roscoe Gies, "Minority Participation in Computational Science," Computers in Science and Engineering, March-April, 2000

Daniel Reed, Roscoe Gies, Charles Catlett. "Distributed Data and Immersive Collaboration," Comm. ACM. 40, p 39-39

Beazley, Lomhdal, Gronbech-Jensen, Gies, and Tamayo, "Parallel Algorithms for Short Range Molecular Dynamics," Annual Reviews in Computational Phyiscs, 3, 1995

H. Fu, R. Gies, M. Mansuripur, "Coercivity Mechanisms in Magneto-Optical Recording Media," Computers in Physics, 8(6) (1994)

R. Gies and M. Mansuripur, "Computer Simulations of Magnetization Reversal Dynamics," Journal of the Magnetic Society of Japan 17(Supplement S1), 53(1993)

R. Gies, P.S. Alexopoulos, and M. Mansuripur, "Micromagnetics of Thin Film Cobalt-Based Media for Magnetic Recording," Computers in Physics, 6(3) (1992)

Collaborators

Alliance Co-PIs:
Charles Bender, Ohio State U
David Ceperley, Univ Illinois
John Connolly, U. Kentucky
Tom DeFanti, U. Illinois
John Hennessey, Stanford
Ken Kennedy, Rice U.
Greg McRae, MIT
Jeremiah Ostriker, Princeton
Daniel Reed, U. Illinois
Larry Smarr, U. Illinois
Rick Stevens, Argonne National Lab
Mary Vernon, U. Wisconsin
Paul Woodward, U. Minnesota

EOT PACI PIs
Allison Clark, NCSA
Scott Lathrop, NCSA
Tom Prudhomme, NCSA
Lisa Bievenue, NCSA
Robert Panoff, Shodor Education Foundation
Robert Oswals, Shodor Education Foundation
Frank Offeather, U.New Mexico
Carl Davis, U. Alabama
Edna Gentry, U. Alabama
Richard Tapia, Rice U.
Cynthia Lanius, Rice U.
Richard Alo, U. Houston, Downtown
Greg Moses, U. Wisconsin
Gregg Vanderheiden, U. Wisconsin
Al Oman, U. Wisconsin
Kris Stewart, San Diego State
Ann Redelfs, San Diego Supercomputer Center
Sid Karin, San Diego Supercomputer Center
Mary Ellen Verona, Maryland Virtual High School
Susan Ragan, Maryland Virtual High School
Geoffrey Fox, Florida State U.
Mark Luker, EDUCAUSE
Dave Staudt, EDUCAUSE
Peter Bloniarz, SUNYAlbany

Other Collaborators
Valerie Taylor, Northwestern U.
Juan Gilbert, Auburn U.
John Hurley, Clark Atlanta U
Linda Gisham, Lesley College
William Kain, Boston University
Claudio Rebbi, Boston University
John Porter, Boston University
Raquell Holmes, Boston University
Charles Delisi, Boston University

Carole Hayes

Office for Distributed and Distance Learning
Florida State University
E-mail: chayes@ddl.fsu.edu
Voice: [illegible] Fax: [illegible]

Education

FLORIDA STATE UNIVERSITY
Ph.D., Adult and Community Education, (August 20[illegible] anticipated)
Coursework completed (June 9[illegible] for doctorate in Adult Education with a minor in Program Evaluation. Graduate advisor Dr. Peter Easton, Florida State University.

FLORIDA STATE UNIVERSITY
Masters, Social Work, August 9[illegible]

UNIVERSITY OF FLORIDA
B.A., Psychology, June 8[illegible]

Experience

FLORIDA STATE UNIVERSITY
Office of Distance and Distributed Learning
Coordinator, External Relations and Development,
August 7[illegible] present

Establish, coordinate, and evaluate support systems for course and degree delivery in an asynchronous mode both on and off the FSU campus. This includes, but is not limited to:

- Negotiation and maintenance of relationships with community colleges
- Development of the Mentor support system; recruitment, hiring, training, and support
- Development of the Student support system including internal (FSU) and external elements: marketing, application, admission, financial aid, enrollment, library support, proctored testing, ongoing support and advisement systems.
- Identification of external funding and development of partnerships for consortial application

Identify, develop, and maintain strategic relationships within the University and with external partners in public and private education, national and international organizations, and public, private, and not-for-profit organizations.
Research, analyze, and evaluate policies that are affected by innovative course development and delivery, i.e., academic integrity, testing, SACS substantive change, faculty rewards & incentives, student satisfaction, student outcomes, etc.
Oversee marketing strategies and implementation.

FLORIDA POSTSECONDARY DISTANCE LEARNING INSTITUTE
Assistant Director, September 9[illegible] August 9[illegible]

Developed and implemented communications strategies and systems for coordination between the State University System and the Community College System of Florida. The purpose of which is to support missions of faculty and staff training and development, development of a Web site, policy analysis for bridging

the two systems on behalf of students and faculty, statewide student advisory system, and to promote resource sharing, e.g., the Distance Learning Library Initiative. Accomplishments include:

- Negotiation of support and logistics for a statewide conference presented by American Association of Higher Education, Teaching, Learning, and Technology Group
- Negotiation of statewide licenses for all institutions for two Web course development and management tools, WebCT and Web Course in a Box
- Design and implementation of the Technical Advisory Group system (TAG teams) for support of training and troubleshooting of Web tools
- Arrangement of statewide training in both tools
- Design and facilitation of development of Florida's Campus, an electronic catalogue for use by students and educators
- Participation in activities with the Board of Regents, Community College Consortium, Florida Distance Learning Network, Postsecondary Education Planning Commission, and legislative committees

TALLAHASSEE COMMUNITY COLLEGE

Coordinator of Distance Learning & Educational Technology, May 1997 – September 1997

Monitor and coordinate development of credit courses for non-traditional adult students. Accomplishments include:

- **Presentation** at the 8th National Conference on College Teaching and Learning, "Secure Testing: Distance Learning Performance Assessment with Validity." April 1997, Jacksonville, FL
- **Publication**: THE WORLD WIDE WEB AS A PLATFORM FOR DISTANCE LEARNING, Fischer, H, Fischer, M. and Hayes, C., Selected Papers from the 7th National Conference on College Teaching and Learning, Ed. Jack Chambers, Florida Community College at Jacksonville, March 1997
- Represent Tallahassee Community College on the Distance Learning Consortium based at Florida State University.
- Represent Tallahassee Community College on the Community College Distance Learning Consortium, a statewide advisory body established by rule of the State Board of Community Colleges.

Affiliations

- Chair, Policy Committee, Florida Distance Learning Association, 1997
- Education Advisory Board, Southern Center for International Studies, 1998
- FACTS Expert Group on Student Support Issues, Co-chair, 1997

Presentations

- University Continuing Education Association, October 1997, Athens, GA
- International Conference on College Teaching and Learning, April 1997, Jacksonville, FL
- Human Resource Management Statewide Conference, September 1997, Daytona Beach, FL
- Instructional Telecommunications Council, October 1997 (2 presentations), Portland, OR
- Building Strategic Alliances, December 1997 (2 presentations), Naples, FL
- Human Resources Management Statewide Conference, September 1997, Daytona Beach, FL
- Instructional Telecommunications Council, October 1997, Austin, TX
- Numerous interinstitutional and agency workshops within the state of Florida

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Boston, MA
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Education

University of California at Santa Cruz, CA.	Biology	BA	1991
Tufts University, Boston MA.	Cell and Developmental Biology,	Ph.D	1997
Harvard University, Boston, MA.	Department of Pathology,	Research Fellow,	1997-1998
Dana Farber Cancer Institute, Boston, MA	Cancer Biology	Research Fellow	1997-1998

Positions:

1998 - Program Manager of EOT-PACI, Center for Computational Science, Boston University, Boston, MA
1998 - Coordinator of Recruitment and Retention, Bioinformatics Graduate Program, Boston University, Boston, MA

Professional and Research Interests

As program manager of the Education, Outreach and Training Partnership for Advanced Computational Infrastructure (EOT-PACI), I have created linkages between computational scientists and educators throughout the country. I have lead workshops in Bioinformatics that bring together researchers and undergraduate educators to develop new ways of teaching undergraduate courses that will lead to increased graduate and employment opportunities for their students. The programs we design in EOT-PACI provide opportunities for diverse members of our society to learn about and participate in computer information systems and computational research. All of my efforts have a strong focus on the inclusion of women and minorities.

As a cell biologist, I am currently interested in the utilization of advanced visualization and simulations to understand biological systems at the cellular level.

Professional Service

1999 - Admissions Committee, Bioinformatics Graduate Program, Boston, University; Member.
1999-2000 Committee of the Northeast Alliance for Minority Graduate Education, Boston University, Boston, MA: Member.
1999 - BioQUEST Library, BioQUEST Curriculum Consortium, Beloit College, Beloit, WI: Editor.

Awards and Honors

1988 Fred Newman Scholarship Fund, East Side Center for Short Term Psychotherapy, NY, NY
1991-1993 National Research Service Award (NRSA), NIH.
1989-1991 Minority Access to Research Careers (MARC), Predoctoral Fellow, NIH
1989 Marine Biological Laboratories (MBL) Porter Foundation Scholarship
1989 MBL American Society for Cell Biology
1988-1991 MARC- NRSA, NIH

Publications

Holmes R.M., Cuhna M.J. and Albertini D.F. Cytoskeleton-mediated aspects of signal transduction. In: Eisenberg RH, ed. Cell Structure and Signaling. JAI Press Inc. Bittar EE, ed. Advances in Molecular and Cell Biology; vol 24, pp. 59-83, 1997

Can A., Holmes R.M. and Albertini D.F. Analysis of the mammalian ovary by confocal microscoy. In Motta PM ed. Microscopy of Reproduction and Development: A Dynamic Approach, pp. 101-109, 1997

Messinger S.M., Can A., Holmes R.M., Mak E. and Albertini D.F. (submitted). Pesticide-induced disruption of cell cycle progression in primate ovarian cells. Environ and Molec Mutagen.

Holmes R and Cales R. Minority Participation in Computational Science. Computing in Science & Engineering, March/April 2000, pp 10-13

Professional Societies

1992 - American Society for Cell Biology
1998 - American Association for the Advancement of Science

Collaborators and Other Affiliations
Roscoe Giles, Boston University,
Scott Lathrop, NCSA, UIUC, Champaign, IL
Linda Gisham, Lesley College, Cambridge, MA
Kris Stewart, San Diego State University, San Diego, CA
Osman Yasar, State University of New York, Brockport, NY
Greg Moses, University of Wisconsin, Madison, WI

Graduate Advisor, David Albertini, Tufts University, Boston, MA
Postdoctoral Advisor, Lan Bo Chen, Dana Farber Cancer Institute, Boston, MA

WILLIAM L. LUPTON
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EDUCATION

LOUISIANA STATE UNIVERSITY, BATON ROUGE, LOUISIANA
COLUMBIA PACIFIC UNIVERSITY, San Rafael, California
Ph.D., Expert Database Systems 1991

NAVAL POSTGRADUATE SCHOOL, Monterey, California
M.S., Computer Science 1973

NAVAL POSTGRADUATE SCHOOL, Monterey, California
B.S., Computer Science 1972

EXPERIENCE

MORGAN STATE UNIVERSITY, BALTIMORE MARYLAND
Chairman, Computer Science Department and
Director, Academic Computing Center 1991 - Present

JACKSON STATE UNIVERSITY, JACKSON, MISSISSIPPI
Chairman, Computer Science Department 1987 - 1991
Managed and supervised activities of 17 faculty and 4 staff members, and 900 student majors. • Taught selected courses. • Developed curriculum, initiated and conducted research. • Acquired Computer Science Accreditation Board (CSAB) accreditation upon first application. • Coordinated Academic Research Computing Center. • Solicited external funds from industry, federal government and other funding sources.

SOUTHERN UNIVERSITY/LOUISIANA STATE UNIVERSITY, BATON ROUGE, LOUISIANA
Professor of Naval Science,
Commanding Officer, Naval Reserve Offices Training Corps Unit 1984 - 1987
Responsible for all aspects of curriculum, personnel, staff and budget for 85 Midshipmen and Officers. • Taught graduate and undergraduate computer science courses at LSU. • Taught Leadership and Management courses at SU.

UNITED STATES NAVAL ACADEMY, ANNAPOLIS MARYLAND
Chairman, Computer Science Department, 1980 - 1984
Designed then newest and most comprehensive computer science major. • Introduced Pascal and ADA programming languages into curriculum. • Directed budget, curriculum, and student/staff research activities. • Lectured at the Maryland Academy of Sciences.

ANNE ARUNDEL COMMUNITY COLLEGE, Annapolis, Maryland
Adjunct Professor - 1981 - 1984
Taught core and support courses to computer science majors and non-majors.

RESEARCH/PUBLICATIONS

Refereed

1. "Solving Incomplete and Incorrect Information Problems Using Conditional Planning, Execution Monitoring, and Situated Planning Agents," published in the proceedings of the Twelfth Ada Software Engineering Education Team (ASEET) symposium. July 1998.
2. "Agent Algebra," (with Vojislav Stojkovic), Symposium on Internet Technologies and Systems. Monterey, California. December 1997.

3. "High Performance Computing in a Computational Science Environment II," Journal of the NTA, Vol. 71, No.3. Fall 1997.
4. "High Performance Computing in a Computational Science Environment," Proceedings of the Sixth Annual Users Conference. El Paso, Texas. September 1996.
5. "Solving the Nine Tiles Problem Using the Genetic Algorithm Implemented in Maple Programming Language," (with Vojislav Stojkovic). Intelligent Systems: A Semiotic Perspective. Proceedings of the 1996 International Multidisciplinary Conference Vol II. Gaithersburg, Maryland. 1996.

TECHNICAL PRESENTATIONS

1. "CS2 - Data Structures and Algorithms, the Morgan State University Approach." Presented at the First Computer Science Curriculum Workshop spontored by ADMI (Association of computer and Information Science/Engineering Departments at Minority Institutions and HURSAP [Howard University Republic of South Africa Project]). January 1997.

2. "High Performance Computing Partnerships" Presentation. First meeting of the Northrup-Grumman High Performance Computing Partnership with historically Black Colleges and Universities. Stennis Space Flight Center, MS. April 1997.

3. "Developing Courses (CS1/CS2) in the Breadth First Curriculum. Does the Paradigm still Apply?" Presented at the 2nd Annual computer Science Curriculum Workshop. Ralph Bunche International Center, Washington, DC. January 1998.

4. "Brining The Information Superhighway to the Inner City" Presentation. Joint Conference, SC-Cosmic 98 Steering Minority Education for the 21st Century and the Symposium of Computing at Minority Universities. ADMI 98 Assessment and Vision, Houston, TX. June 1998.

AFFILIATIONS

Past National President - Association of Department of Computer Science/Engineering at Minority Institutions (ADMI).

President, Baltimore Chapter - National Technical Association (NTA)

Member - National Science Foundation (NSF) Advisory Committee

Member - Office of Cross Disciplinary Activities

Member - Directorate for Computer and Information Science and Engineering Association for Computing Machinery (ACM)

Member - National Academy of Sciences

Program Evaluator - Computer Science Accreditation Board

DONNA S. REESE
Associate Professor, Computer Science
P. O. Box 9627, NSF Engineering Research Center
Phone: 662–325–8278 Fax Number: 662–325–7692
e–mail: dreese@erc.msstate.edu

Professional Preparation

Louisiana Tech	Computer Science	BS, 1979
Texas A&M University	Computer Science	MS, 1981
Texas A&M University	Computer Science	PhD, 1985

Appointments

Associate Professor, Computer Science, Mississippi State University, 1996–Present

Assistant Professor, Computer Science, Mississippi State University, 1992–1996

System Software Thrust Leader, NSF Engineering Research Center for Computational Field Simulation, 1990–April 1997

Visiting Assistant Professor, Computer Science, Mississippi State University, 1989–1992

Part–time Lecturer, University of Texas, Austin, 1986–1987

Research Associate & System Manager, Texas A&M University, College Station, 1982–1985

Software Engineer, General Dynamics, Fort Worth, TX, 1979–1980

Closely Related Publications

1. Lambert, A. B., King, R. L., and Russ, S. H., Reese, D. S., "Intelligent Control Agents Using the Artificial Immune System Model for Resource Management of Heterogeneous Computing," *Proceedings of International Conference on Computational Intelligence for Modeling Control and Automation*, Vienna, Austria, volume 55, pp. 116–121, February, 1999.
2. Harden, J., Alexander, C., Reese, D., Evans, M., Hudnall, C., Kadambi, S., and Henley, G., "In Search of a Standards–Based Approach to Hybrid Performance Monitoring," *IEEE Parallel & Distributed Technology and Computer*, pp. 61–71, November, 1995.
3. King, R.L., Lambert, A.B., Russ, S.H., and Reese, D., "The Biological Basis of the Immune System as a Model for Intelligent Agents," Second Workshop on Bio–Inspired Solutions to Parallel Processing Problems, Lecture Notes in Computer Science 1586, pp. 156–164, Springer 1999.
4. Valsalam,V. and Reese, D., "Tools for Improving the Out–of–Core Performance of Data and Computation Intensive Applications," SPECTS, Chicago, IL, pp. 89–96, July 1999.
5. Burton, L., Machiraju, R. and Reese, D., "Dynamic View–Dependent Partitioning of Grids with Complex Boundaries for Object–Oreder Rendering Techniques," accepted for Parallel Visualization and Graphics '99, pp. 89–96, San Francisco, CA, October, 1999.

Other Significant Publications

1. Miller, N. E., and Reese, D., "Instructional Technology in the CS Introductory Programming Classes," 1999 Southeastern Section Meeting, Clemson, SC, April, 1999.
2. Koteshwar, R., Saha, A., Harden, J. and Reese, D., "High Performance Multiblock Multigrid Parallel Solver for Navier–Stokes Equations," *Proceedings of the High Performance Computing Symposium 97*, Atlanta, Georgia, pp. 9–14, April 1997.

Synergistic Activities

1. University Instructional Improvement Committee
2. University Committee on Courses and Curriculum
3. College of Engineering Hearin Undergraduate General Committee, chair
4. Computer Science accreditation coordinator
5. University Advising Task Force

Collaborators and Other Affiliations

(i) Collaborators

Boggess, Lois, Mississippi State University

Bridges, Susan, Mississippi State University

Hansen, Eric, Mississippi State University

Harden, Jim, Mississippi State University

Miller, Nancy, Mississippi State University

Skjellum, Tony, Mississippi State University

(ii) Graduate and Post Doctoral Advisors

Noel Strader, Motorola

Sallie Sheppard, retired

(iii) Thesis Advisor and Postgraduate–Scholar Sponsor

1. Ed Luke, "A Rule–based Specification System for Computational Fluid Dynamics," PhD in Computational Engineering, December 1999.
2. Lance Burton, "Dynamic View–dependent Partitioning of Structured Grids for Object–Order Rendering Techniques," PhD in Computer Science, December 1999.
3. Thomas Schrupp, "Visualization of Performance Monitoring Data Among Collaborating Widely–Distributed Users," Master of Science in Computer Science (thesis), December 1999.
4. Leding Wu, "A Java Implementation of DQOS TOOL," Master of Science in Computer Science (project), May 1999.
5. Rajesh Raju, "Hybrid Performance Monitoring Instrumentation for Linux," Master of Science in Computer Science (project), May 1999.
6. Vinod K. Valsalam, "Tools for Improving the Out–of–Core Performance of Data and Computation Intensive Applications," Master of Science in Computational Engineering (thesis), December 1998.
7. Rajeev Kotheshwar, "Improving the Floating Point Performance of Engineering Applications: A Compiler and Memory Hierarchy Based Approach," Ph.D. in Computational Engineering, May 1998.
8. Adam Gaither, "A Boundary Representation Solid Modeling Data Structure for General Numerical Grid Generation," Master of Science in Computer Science (thesis), December 1997.
9. Praveen Kotha–Kumar, "Development of Database Laboratory Exercises for CS–II Students," Master of Science in Computer Engineering (project), May 1996.
10. Siva Korlakunta, "Object–Oriented Implementation for NAS Parallel Benchmarks," Master of Science in Computer Science (thesis), May 1995.

Currently major professor for five MS and one PhD student.

Dr. Sara Stoecklin, Assoc. Professor, Tallahassee, Florida
Department of Computer and Information Science, Florida A & M University

Education:

B.S. : Major- Mathematics Minor- Business : Troy State University :
M.S. : Computer Information Science : East Tennessee State University : GPA .
Thesis Topic; Object Oriented Detailed Methodology to Develop Computer Systems
Ph.D. : Computer Information Systems : Florida State University - GPA
Dissertation Topic: Object-Oriented Requirements Analysis and Design of Computer Integrated Manufacturing Systems

Professional Experience:

Pres - Florida A & M Univ. Tallahassee, Fl; Assoc. Prof.- CIS
- Florida Health and Rehabilitation Services; Fl.; Director for Software Engineering
- Florida A & M Univ. ; Fl.; Assoc. Prof- CIS
- East Tennessee State Univ. Johnson City, Tenn.; Inst.- CICS
- St. Louis Comm. College; Missouri; Asst. Prof.- IS
- State of Illinois; Springfield, Illinois; Project Coordinator- Dept. of Revenue
- Independent Consultant; Customer List on Request
- Gardner Denver Corporation; Quincy, Ill.; Project Analyst
- International Business Machines; Montgomery, Alabama; Systems Engineer

Recognitions:

IBM Employee Award
Most Outstanding Graduate Student, - East Tennessee State University
Research/Teaching Fellow, East Tennessee State University
Member, Upsilon Pi Epsilon Honor Society - ETSU Chapter
University Honor Roll (all years of Graduate School (GPA =.)
Finalist for Teacher Incentive Program (TIP) Award
Awardee, Teaching Incentive Program (TIP) ,FAMU

TOOLS

1) UML+Case Tool – This tool builds software specification for distributed real-time software systems using UML + Petri Nets +RTCTL. It is used for many research students. Techniques used at DesignFest
2) JSBB – Spoken Language User Interface Builder – This tool allows students to build spoken language interfaces. Work done as co-author with Dr. Allen. Demonstrated at OOPSLA – patent pending
3) TrainBrain – This tool allows control of the train using the computer. It is work done with students, Dr. Allen, and Mr. Payne.

Directed Master's Thesis: (Established program)

Wylie, Melinda, "Integrating Formal Behavioral Specifications into the Unified Modeling Language," Florida A & M University, August,
Yung, Brenda, "Development of Business Specifications using Unified Modeling Language and ," Florida A & M University, Spring

Grants:

- 9140 - ,20 - NSF- PI, Software Engineering Research MII
- 890 - ,50 - Cargill - PI, Software Engineering Education
- 9130 - ,50 - NSF - Co-PI, Center for Distributed Computing

....Real-Time Specifications UML to RAS

- 980 - ,50 - P & G - PI, Educating the Next-Generation
- 920 - ,40 - DARPA - PI, Ada in Software Engineering
- 9150 - ,10 - NSF - PI, Software Engineering Lab Infrastructure
- 912 - ,50 - NSF/AIRMICS - PI,Requirements Engineering

Publications: Year 9 - Most Important and Recent

Stoecklin, S., Allen, C., "Implementing Fowler's Analysis aValidator Pattern in Java," Java Development Journal, 9 , Accepted to appear in July

Stoecklin, Chatmon, C., Allen, C., "A UML-Based Design for an Intelligent Manufacturing Workcell Controller, Proceedings of the AoM/IaOM Conference, San Diago,September, 9

Stoecklin, S.,Williams, D. "Tailoring the Process Model for Maintenance and Re-Engineering," IEEE Euromicro Conference on Software Maintenance and Re-Engineering, Florence, Italy, March, 8

Stoecklin, S. Williams, "Understanding Object-Oriented Specification Techniques Using Familiar Systems," Software Engineering Education and Practice, IEEE Computer Science Press, Dunedin, New Zealand, Janurary, 28

Chandra, U, Stoecklin, S., etal, Introducing Research in an Undergraduate Program, Journal of College Science Teaching, Vol XXVI Number 2, November 8 Year 9

Other Publications

Allen, C., Stoecklin, S., et al, "A Software Engineering environment to Teach Students about Spoken Language Systems" Journal of Computing in Small Colleges, April 9

Allen, C., Stoecklin, S., et al, "A Software Engineering An Architecture for Creating Distributed Spoken Language Systems," Proceedings of the 3rd IASTED International Conference on Software Engineering and Applications, Scottsdale, A.Z, October, 9

Stoecklin, S., "Backed into a Corner," Proceedings of the Fourth Annual CCSC Midwestern Conference, November, 9 Hickory, N.C., November 9

Stoecklin, S., "Objects, Objects Everywhere But Not a One to Teach",The Journal of Computing in Small Colleges, Volume 1 Number 2, November 9

Stoecklin, S.etal, "Teaching Object-Oriented Design and Programming in Computer Science Curriculums," SIGSE Bullitan, Volume 2 Number 1, March 9

JOE F. THOMPSON
William L. Giles Distinguished Professor of Aerospace Engineering
P. O. Box 9627, NSF Engineering Research Center
Phone: 662–325–8278 Fax Number: 662–325–7692
e–mail: joe@erc.msstate.edu

Professional Preparation

Mississippi State University	Physics	BS, 1961
Mississippi State University	Aerospace Engineering	MS, 1963
Georgia Institute of Technology	Aerospace Engineering	PhD, 1971

Appointments

Professor, Department of Aerospace Engineering, Mississippi State University, 1964–Present

Aerospace Engineer, Marshall Space Flight Center, NASA, 1963–1964

Closely Related Publications

1. *Handbook for Grid Generation*, Thompson, J.F., Soni, B.K., Weatherill, N. (Eds), CRC Press, 1999.
2. *Handbook for Computer Science and Engineering* (Editorial Board, Editor for Computational Science Section), Allen Tucker (Ed.), CRC Press, 1997.
3. *Numerical Grid Generation: Foundations and Applications*, Thompson, J.F., Warsi, Z.U.A. and Mastin, C.W., North–Holland, 1985. (Available on the Web at www.erc.msstate.edu)
4. Chrisochoides, N., Fox, G., and Thompson, J.F., "Menus–PGG: A Mapping Environment for Unstructured and Structured Numerical Parallel Grid Generation," *Contemporary Mathematics*, Vol. 180, 1994.
5. "A Survey of Grid Generation Techniques and Systems with Emphasis on Recent Development," Thompson, J.F. and Hamann, B. *Surveys on Mathematics for Industry,"* Springer–Verlag, 1997.

Other Significant Publications

1. Luong, P.V., Thompson, J.F., and Gatlin, B., "Solution–Adaptive and Quality–Enhancing Grid Generation," *Journal Of Aircraft*, Vol. 3, Page 2, 1993.
2. Thompson, J., "The National Grid Project," *Computing Systems in Engineering*, Vol 3, Nos. 1–4, pp. 393–399, 1992.
3. Tu, Y., and Thompson, J.F., "Three–Dimensional Solution–Adaptive Grid Generation on Composite Configurations," *AIAA Journal*, Vol. 29, No. 12, pp. 2025–2026, 1991.
4. Warsi, Z.U.A., and Thompson, J.F., "Application of Variational Methods in The Fixed and Adaptive Grid Generation," *Computers & Mathematical Applications*, Vol. 19, No. 8–9, p. 31, 1990.
5. Thompson, J.F., "A General Three–Dimensional Elliptic Grid Generation System on a Composite Block Structure," *Computer Methods in Applied Mechanics and Engineering*, Vol. 64, p. 377, 1987.

Synergistic Activities

1. Founding Director, NSF/MSU Engineering Research Center for Computational Field Simulation
2. Led the formation of the multi–university team that teamed with Nichols Research and Raytheon/E–Systems to win the support contracts for Programming Environment & Training at three of the four DoD HPC Major Shared Resource Centers as part of the DoD HPC Modernization Program, and now leads this team for the MSRC at the Army Engineer Research & Development Center in Vicksburg, Mississippi
3. Editorial board, *Journal of Computational Physics*
4. Appointed by President Clinton to the President's Information Technology Advisory Committee

Collaborators and Other Affiliations

(i) Collaborators

DoD Programming Environment & Trianing Contract

Polly Baker, *NCSA, Illinois* Richard Hanson, *Rice*
Keith Bedford, *Ohio State* Ken Kennedy, *Rice*

Charles Bender, *Ohio State*
David Bernholdt, *Syracuse*
Willie Brown, *Jackson State*
Shirley Browne, *Tennessee*
Graham Carey, *Texas*
Jack Dongarra, *Tennessee*
Geoffrey Fox, *Syracuse*
Chuck Koelbel, *Rice (now NSF)*
Raghu Machiraju, *Ohio State*
Wayne Mastin, *Nichols Research Corporation*
Tinsley Oden, *Texas*
Larry Smarr, *NCSA, Illinois*
Louis Turcotte, *Army Engineer Research & Development Center*
Mary Wheeler, *Texas*

Handbook of Grid Generation

Michael Aftosmis, *NASA Ames*
Timothy Baker, *Princeton*
Mark Beall, *Rensselaer Polytechnic Institute*
Marsha Berger, *Courant Institute*
William Chan, *MCAT/NASA Ames*
Hugues deCougny, *Rensselaer Polytechnic Inst*
Luis Eca, *Technical University of Lisbon*
Peter Eiseman, *Program Development Corp*
Austin Evans, *NASA Lewis*
Gerald Farin, *Arizona State*
David Ferguson, *Boeing*
Luca Formaggia, *Ecole Polytec Fed de Lausann*
Timothy Gatzke, *Boeing*
Paul–Louis George, *INRIA*
Bernd Hamann, *University of California, Davis*
O. Hassan, *University of Wales Swansea*
Jochem Hauser, *CLE Salzgitter Bad*
Frederic Hecht, *INRIA*
Sergey A. Ivanenko, *Com Ctr of Rus Aca of Sci*
Olivier–Pierre Jacquotte, *Research Directorate*
Brian Jean, *Los Alamos*
Yannis Kallinderis, *University of Texas, Austin*
O.B. Khairullina, *Urals Brnh of Rus Aca of Sci*
Ahmed Khamayseh, *Los Alamos*
Andrew Kuprat, *Los Alamos*
Kelly Laflin, *North Carolina State*
Kunwoo Lee, *Seoul National University*
David Marcum, *Mississippi State*
C. Wayne Mastin, *Nichols Research Corporation*
D. Scott McRae, *North Carolina State*
Robert Meakin, *Army Aeroflightdynamics Directorate*
John Melton, *NASA Ames*
David Miller, *NASA Lewis*
K. Morgan, *University of Wales Swansea*
Robert O'Bara, *Rensselaer Polytechnic Institute*
Sangkun Park, *Information Technology R&D Center*
J. Peiro, *Imperial College*
J. Peraire, *MIT*
E.J. Probert, *University of Wales Swansea*
Anshuman Razdam, *Arizona State*
Robert Schneiders, *MAGMA Giessereitech GmbH*
Jonathon Shaw, *Aircraft Research Association*
A.F. Sidorov, *Urals Branch of the Russian Acad of Sci*
Mark Shephard, *Rensselaer Polytechnic Institute*
Bharat Soni, *Mississippi State*
Stefan Spekreijse, *National Aerospace Lab*
O.V. Ushakova, *Urals Branch of the Russian Acad of Sci*
Zahir U.A. Warsi, *Mississippi State*
Nigel Weatherill, *University of Wales Swansea*
Tzu–Yi Yu, *Chaoyang University of Technology*
Paul Zegeling, *University of Utrecht*
Yang Zia, *CLE Salzgitter Bad*

President's Information Technology Advisory Committee

Eric Benhamou, *3Com Corporation*
Vinton Cerf, *MCI WorldCom*
Ching–Chih Chen, *Simmons College*
David Cooper, *Livermore National Lab*
Steven Dorfman, *Hughes Electronics Corp*
David Dorman, *PointCast*
Robert Ewald, *Cray Research*
David Farber, *University of Pennsylvania*
Sherrilynne Fuller, *University of Washington*
Hector Garcia–Molina, *Stanford*
Susan Graham, *Univ of California, Berkeley*
James Gray, *Microsoft Research*
W. Daniel Hillis, *Walt Disney Imagineering*
Bill Joy, *Sun Microsystems*
Robert Kahn, *Corp for National Research Initiatives*
Ken Kennedy, *Rice*
John Miller, *Montana State*
David Nagel, *AT&T Labs*
Raj Reddy, *Carnegie Mellon*
Edward Shortliffe, *Stanford School of Medicine*
Larry Smarr, *University of Illinois, Urbana–Champaign*
Leslie Vadasz, *Intel*
Andrew Viterbi, *QUALCOMM*
Steven Wallach, *CenterPoint Ventures*
Irving Wladawsky–Berger, *IBM*

(ii) Graduate and Post Doctoral Advisors

PhD, James Wu – *Retired, Georgia Tech*
MS, Joseph Cornish – *Retired, Lockheed*

(iii) Thesis Advisor and Postgraduate–Scholar Sponsor

John West, *Army Engineer Research & Development Center*
29 Total PhD & MS Students

CURRICULUM VITAE
JAMES C. TURNER

PRESENT POSITION

Florida State University
Associate Professor
Department of Computer Science
School of Computational Science
and Information Technology

EDUCATION

Ph.D. in Applied Mathematics
Carenegie Mellon University 1968
Thesis Advisor: Max Ginzburger

M.S. in Applied Mathematics
University of Michigan 1967
Thesis Advisor: Lamberto Cesari

B.S. in Mathematics
University of New Orleans 1965

SELECTED PUBLICATIONS

Alliances Foster Participation of Minorities in Applied Mathematics, **Society for Industrial and Applied Mathematics News**, Volume 27, Number 1, January 1994.

Perspectives on the Under-Representation of Minorities in Mathematics: An Interview with James C. Turner Jr., **Notices of the American Mathematical Society**, Volume 41, Number 5, May/June 1994.

Numerical Simulations of the Hysteretic Event in the Computation of Magnetization, **Proceedings of the 3rd International Baruchet Conference on Physics and Technology**, sponsored by The Abdus Salam International Centre for Theoretical Physics, Gaborone, Botswana, June 1989.

The Controllability of Systems Governed by Parabolic Differential Equations, with Y. Cao, M. Ginzburger, **Journal of Mathematical Analysis and Applications,** Vol. 134, 1988.

Analysis and Finite Element Approximation of an Optimal Control Problem in Electrochemistry with Current Density Controls, with L. S. Hou, **Numerische Mathematik**, Vol. 71, No. 3, 1995.

SELECTED RESEARCH PROJECTS

Scientific Computing Research Environments for the Mathematical Sciences, National Science Foundation, 1989-1992, NSF #, Co-PI.

The Computer Science, Engineering and Mathematics Scholarship Program, National Science Foundation, 1990, Co-PI, Pending.

Acquisition of a Multiprocessor Computer-Server for the Study of Multiscale Environmental and Industrial Systems, National Science Foundation, 1990-1991, Co-PI, Pending.

Programs for Attracting Minority Students to Research Careers in Mathematics and Computational Science, U. S. Department of Energy, 1989-1990, PI.

National Association of Mathematicians High Performance Computing Initiative, U. S. Department of Energy 1993-1994, Co-PI.

Integrated Intelligent Modeling, Design and Control of Crystal Growth Processes, Air Force Office of Scientific Research 1992-1993, PI.

SELECTED TASK FORCES AND COMMITTEES

1. *Committee on the Profession*
   American Mathematical Society
   1999
2. *Board of Governors*
   Institute for Mathematics and its Applications
   University of Minnesota
   1999
3. *Education Committee*
   Society for Industrial and Applied Mathematics
   1994 Present
4. *Task Force on Under-representation of Minorities in Mathematics*
   American Mathematics Society
   Chair
   1993
5. *U. S. National Committee for Mathematics*
   National Academy of Sciences
   1988 Present

SELECTED CONFERENCES ATTENDED

1. *ADP Charter Schools - Teacher Workshop on Technology and Mathematics*
   Phoenix, Arizona
   February 1999
2. *Minorities and Applied Mathematicians - Connections to Industry and National Laboratories*
   The Mathematical Sciences Research Institute & Lawrence Berkeley National Laboratory
   Berkeley, California
   September 1998
3. *Computational Science Teacher Workshop*
   Florida A & M University Developmental Research School
   April 1998

REVIEW COMMITTEES

1. *Advisory Committee*
   Division of Mathematical Sciences
   The National Science Foundation
   1999
2. *Chairman External Review (sub-Committee)*
   Division of Mathematical Sciences
   The National Science Foundation
   Spring 1999
3. *External Review Committee*
   Directorate for Education and Human Resources
   The National Science Foundation
   July 1999

SUMMARY PROPOSAL BUDGET YEAR 1

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Florida State University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Geoffrey C Fox**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Geoffrey C Fox - P.I.**	**0.00**	**0.00**	**0.75**	$ **11,250**	$
2. **Lawrence C Dennis - Sr. Pers.**	**0.00**	**0.00**	**0.75**	**6,500**	
3. **Ian Douglas - Sr. Pers.**	**0.00**	**0.00**	**1.00**	**8,667**	
4. **Peter Dragovitsch - Sr. Pers.**	**7.50**	**0.00**	**0.00**	**40,005**	
5. **Carole Hayes - Sr. Pers.**	**0.00**	**0.00**	**1.00**	**4,167**	
6. (**2**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**1.75**	**17,139**	
7. (**7**) TOTAL SENIOR PERSONNEL (1 - 6)	**7.50**	**0.00**	**5.25**	**87,728**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**1**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**4.00**	**0.00**	**0.00**	**20,000**	
3. (**6**) GRADUATE STUDENTS				**96,000**	
4. (**4**) UNDERGRADUATE STUDENTS				**16,000**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**219,728**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**20,332**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**240,060**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				**0**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**13,000**	
2. FOREIGN				**0**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**7,000**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**4,000**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**463,824**	
6. OTHER				**10,285**	
TOTAL OTHER DIRECT COSTS				**485,109**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**738,169**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **100% MTDC (Rate: 46.5000, Base: 264060) (Cont. on Comments Page)**					
TOTAL INDIRECT COSTS (F&A)				**180,912**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**919,081**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **919,081**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*: **Geoffrey C Fox** DATE

ORG. REP. TYPED NAME & SIGNATURE* DATE

FOR NSF USE ONLY

INDIRECT COST RATE VERIFICATION

Date Checked	Date Of Rate Sheet	Initials - ORG

SUMMARY PROPOSAL BUDGET COMMENTS - Year 1

Other Senior Personnel

Name - Title	Cal	Acad	Sumr	Funds Requested
Lacher, Robert C - Co P.I.	0.00	0.00	0.75	8250
Turner, James - Sr. Pers.	0.00	0.00	1.00	8889

**** I- Indirect Costs**
First $25,000 of subcontract (Rate: 46.5000, Base 125000)

SUMMARY PROPOSAL BUDGET YEAR 2

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Florida State University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Geoffrey C Fox**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Geoffrey C Fox - P.I.**	**0.00**	**0.00**	**0.75**	$ **11,250**	$
2. **Lawrence C Dennis - Sr. Pers.**	**0.00**	**0.00**	**0.75**	**6,500**	
3. **Ian Douglas - Sr. Pers.**	**0.00**	**0.00**	**1.00**	**8,667**	
4. **Peter Dragovitsch - Sr. Pers.**	**7.50**	**0.00**	**0.00**	**40,005**	
5. **Carole Hayes - Sr. Pers.**	**0.00**	**0.00**	**1.00**	**4,167**	
6. (**2**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**1.75**	**17,139**	
7. (**7**) TOTAL SENIOR PERSONNEL (1 - 6)	**7.50**	**0.00**	**5.25**	**87,728**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**1**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**4.00**	**0.00**	**0.00**	**20,000**	
3. (**6**) GRADUATE STUDENTS				**96,000**	
4. (**4**) UNDERGRADUATE STUDENTS				**16,000**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**219,728**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**20,332**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**240,060**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				**0**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**13,000**	
2. FOREIGN				**0**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**7,000**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**4,000**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**471,264**	
6. OTHER				**10,285**	
TOTAL OTHER DIRECT COSTS				**492,549**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**745,609**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **100% MTDC (Rate: 46.5000, Base: 264060)**					
TOTAL INDIRECT COSTS (F&A)				**122,787**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**868,396**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **868,396**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*: **Geoffrey C Fox** DATE

ORG. REP. TYPED NAME & SIGNATURE* DATE

FOR NSF USE ONLY

INDIRECT COST RATE VERIFICATION

Date Checked	Date Of Rate Sheet	Initials - ORG

SUMMARY PROPOSAL BUDGET COMMENTS - Year 2

Other Senior Personnel

Name - Title	Cal	Acad	Sumr	Funds Requested
Lacher, Robert C - Co P.I.	0.00	0.00	0.75	8250
Turner, James - Sr. Pers.	0.00	0.00	1.00	8889

SUMMARY PROPOSAL BUDGET YEAR 3

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Florida State University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Geoffrey C Fox**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Geoffrey C Fox - P.I.**	**0.00**	**0.00**	**0.75**	$ **11,250**	$
2. **Lawrence C Dennis - Sr. Pers.**	**0.00**	**0.00**	**0.75**	**6,500**	
3. **Ian Douglas - Sr. Pers.**	**0.00**	**0.00**	**1.00**	**8,667**	
4. **Peter Dragovitsch - Sr. Pers.**	**7.50**	**0.00**	**0.00**	**40,005**	
5. **Carole Hayes - Sr. Pers.**	**0.00**	**0.00**	**1.00**	**4,167**	
6. (**2**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**1.75**	**17,139**	
7. (**7**) TOTAL SENIOR PERSONNEL (1 - 6)	**7.50**	**0.00**	**5.25**	**87,728**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**1**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**4.00**	**0.00**	**0.00**	**20,000**	
3. (**6**) GRADUATE STUDENTS				**96,000**	
4. (**4**) UNDERGRADUATE STUDENTS				**16,000**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**219,728**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**20,332**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**240,060**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				**0**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**13,000**	
2. FOREIGN				**0**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**7,000**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**4,000**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**469,058**	
6. OTHER				**10,285**	
TOTAL OTHER DIRECT COSTS				**490,343**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**743,403**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **100% MTDC (Rate: 46.5000, Base: 264060)**					
TOTAL INDIRECT COSTS (F&A)				**122,787**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**866,190**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **866,190**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*	DATE	FOR NSF USE ONLY
Geoffrey C Fox		INDIRECT COST RATE VERIFICATION
ORG. REP. TYPED NAME & SIGNATURE*	DATE	Date Checked / Date Of Rate Sheet / Initials - ORG

SUMMARY PROPOSAL BUDGET COMMENTS - Year 3

Other Senior Personnel

Name - Title	Cal	Acad	Sumr	Funds Requested
Lacher, Robert C - Co P.I.	**0.00**	**0.00**	**0.75**	**8250**
Turner, James - Sr. Pers.	**0.00**	**0.00**	**1.00**	**8889**

SUMMARY PROPOSAL BUDGET YEAR 4

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Florida State University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Geoffrey C Fox**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Geoffrey C Fox - P.I.**	**0.00**	**0.00**	**0.75**	$ **11,250**	$
2. **Lawrence C Dennis - Sr. Pers.**	**0.00**	**0.00**	**0.75**	**6,500**	
3. **Ian Douglas - Sr. Pers.**	**0.00**	**0.00**	**1.00**	**8,667**	
4. **Peter Dragovitsch - Sr. Pers.**	**7.50**	**0.00**	**0.00**	**40,005**	
5. **Carole Hayes - Sr. Pers.**	**0.00**	**0.00**	**1.00**	**4,167**	
6. (**2**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**1.75**	**17,139**	
7. (**7**) TOTAL SENIOR PERSONNEL (1 - 6)	**7.50**	**0.00**	**5.25**	**87,728**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**1**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**4.00**	**0.00**	**0.00**	**20,000**	
3. (**6**) GRADUATE STUDENTS				**96,000**	
4. (**4**) UNDERGRADUATE STUDENTS				**16,000**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**219,728**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**20,332**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**240,060**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				**0**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**13,000**	
2. FOREIGN				**0**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**7,000**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**4,000**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**476,584**	
6. OTHER				**10,285**	
TOTAL OTHER DIRECT COSTS				**497,869**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**750,929**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **100% MTDC (Rate: 46.5000, Base: 264060)**					
TOTAL INDIRECT COSTS (F&A)				**122,787**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**873,716**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **873,716**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*: **Geoffrey C Fox** DATE

ORG. REP. TYPED NAME & SIGNATURE* DATE

FOR NSF USE ONLY

INDIRECT COST RATE VERIFICATION

Date Checked	Date Of Rate Sheet	Initials - ORG

SUMMARY PROPOSAL BUDGET COMMENTS - Year 4

Other Senior Personnel

Name - Title	Cal	Acad	Sumr	Funds Requested
Lacher, Robert C - Co P.I.	**0.00**	**0.00**	**0.75**	**8250**
Turner, James - Sr. Pers.	**0.00**	**0.00**	**1.00**	**8889**

SUMMARY PROPOSAL BUDGET YEAR 5

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Florida State University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Geoffrey C Fox**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Geoffrey C Fox - P.I.**	**0.00**	**0.00**	**0.75**	$ **11,250**	$
2. **Lawrence C Dennis - Sr. Pers.**	**0.00**	**0.00**	**0.75**	**6,500**	
3. **Ian Douglas - Sr. Pers.**	**0.00**	**0.00**	**1.00**	**8,667**	
4. **Peter Dragovitsch - Sr. Pers.**	**7.50**	**0.00**	**0.00**	**40,005**	
5. **Carole Hayes - Sr. Pers.**	**0.00**	**0.00**	**1.00**	**4,167**	
6. (**2**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**1.75**	**17,139**	
7. (**7**) TOTAL SENIOR PERSONNEL (1 - 6)	**7.50**	**0.00**	**5.25**	**87,728**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**1**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**4.00**	**0.00**	**0.00**	**20,000**	
3. (**6**) GRADUATE STUDENTS				**96,000**	
4. (**4**) UNDERGRADUATE STUDENTS				**16,000**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**219,728**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**20,332**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**240,060**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				**0**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**13,000**	
2. FOREIGN				**0**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**7,000**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**4,000**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**479,542**	
6. OTHER				**10,285**	
TOTAL OTHER DIRECT COSTS				**500,827**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**753,887**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **100% MTDC (Rate: 46.5000, Base: 264060)**					
TOTAL INDIRECT COSTS (F&A)				**122,787**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**876,674**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **876,674**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*: **Geoffrey C Fox** DATE

ORG. REP. TYPED NAME & SIGNATURE* DATE

FOR NSF USE ONLY

INDIRECT COST RATE VERIFICATION

Date Checked	Date Of Rate Sheet	Initials - ORG

SUMMARY PROPOSAL BUDGET COMMENTS - Year 5

Other Senior Personnel

Name - Title	Cal	Acad	Sumr	Funds Requested
Lacher, Robert C - Co P.I.	0.00	0.00	0.75	8250
Turner, James - Sr. Pers.	0.00	0.00	1.00	8889

SUMMARY PROPOSAL BUDGET

Cumulative

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Florida State University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Geoffrey C Fox**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Geoffrey C Fox - P.I.**	**0.00**	**0.00**	**3.75**	$ **56,250**	$
2. **Lawrence C Dennis - Sr. Pers.**	**0.00**	**0.00**	**3.75**	**32,500**	
3. **Ian Douglas - Sr. Pers.**	**0.00**	**0.00**	**5.00**	**43,335**	
4. **Peter Dragovitsch - Sr. Pers.**	**37.50**	**0.00**	**0.00**	**200,025**	
5. **Carole Hayes - Sr. Pers.**	**0.00**	**0.00**	**5.00**	**20,835**	
6. (**2**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**8.75**	**85,695**	
7. (**7**) TOTAL SENIOR PERSONNEL (1 - 6)	**37.50**	**0.00**	**26.25**	**438,640**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**5**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**20.00**	**0.00**	**0.00**	**100,000**	
3. (**30**) GRADUATE STUDENTS				**480,000**	
4. (**20**) UNDERGRADUATE STUDENTS				**80,000**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**1,098,640**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**101,660**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**1,200,300**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				**0**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**65,000**	
2. FOREIGN				**0**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**35,000**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**20,000**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**2,360,272**	
6. OTHER				**51,425**	
TOTAL OTHER DIRECT COSTS				**2,466,697**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**3,731,997**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE)					
TOTAL INDIRECT COSTS (F&A)				**672,064**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**4,404,061**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **4,404,061**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*: **Geoffrey C Fox** DATE

ORG. REP. TYPED NAME & SIGNATURE* DATE

FOR NSF USE ONLY

INDIRECT COST RATE VERIFICATION

Date Checked	Date Of Rate Sheet	Initials - ORG

NSF Form 1030 (10/99) Supersedes all previous editions

C***SIGNATURES REQUIRED ONLY FOR REVISED BUDGET (GPG III.B)**

Budget Justification

Senior Personnel - Senior personnel from FSU include the following individuals:
Geoffrey Fox, Lawrence C. Dennis, Ian Douglas, Peter Dragovitsch, Carole Hayes, Robert C. Lacher and James Turner. Estimated salaries are based on their current salaries.

Other Personnel
Programmer - This is based on the current rate paid to personnel currently in similar positions.
Graduate Students - The graduate students salaries are based on the annual stipend paid to students in computer science.
Undergraduates - The undergraduate students are hired on a per hour basis. The rate of pay depends on the qualifications of the students, but is typically between $8 and $10 per hour.

Fringe Benefits
Fringe benefits include Social Security, Medicare, Retirement, Insurance and Workman's Compensation.

Faculty and Professionals - 28% (includes all of the above)
Graduate and Undergraduate Students - 0.9% (Workmen's Compensation)

Travel
The travel costs are for 15 trips per year at approximately $800 each. This estimate is based on the average costs of flights from Tallahassee, the standard per diem and the state contract price for rental cars.

Other Direct Costs
Materials and Supplies - This includes the costs for routine printing, copying, and long-distance phone calls directly related to the project. It also includes other miscellaneous supplies for those individuals working on this project.
Publication Costs/Documentation/Dissemination - This includes the estimated costs of pages charges and publication of standard documentation for this project.
Subawards - Subawards will be made to the following:

Boston University: (Roscoe Giles - PI)
Florida A & M University: (Sara Stoecklin - PI)
Jackson State University: (Willie J. Brown - PI)
Mississippi State University: (Joe Thompson - PI)
Morgan State University: (William L. Lupton - PI)

Other - This item is the tuition for the graduate students in the program. No overhead is charged on these funds.

Indirect Costs
The indirect costs include 46% of the Modified Total Direct Cost (MTDC) of funds spent at FSU (this includes all direct costs except the graduate student tuition) and 46% of the first $25,000 of each subcontract for the first year only. For years 2-5 the indirect cost is 46% of the MTDC for funds spent at FSU.

SUMMARY PROPOSAL BUDGET

YEAR 1

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Boston University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Roscoe Giles**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Roscoe Giles - P.I.**	**0.00**	**0.00**	**0.00**	$ **0**	$
2. **Raquell M Holmes - Sr. Pers.**	**1.80**	**0.00**	**0.00**	**8,837**	
3.					
4.					
5.					
6. (**0**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**0.00**	**0**	
7. (**2**) TOTAL SENIOR PERSONNEL (1 - 6)	**1.80**	**0.00**	**0.00**	**8,837**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**0**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**0.00**	**0.00**	**0.00**	**0**	
3. (**1**) GRADUATE STUDENTS				**19,500**	
4. (**1**) UNDERGRADUATE STUDENTS				**5,000**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**33,337**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**1,829**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**35,166**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				**0**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**4,000**	
2. FOREIGN				**0**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**0**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**0**	
TOTAL OTHER DIRECT COSTS				**0**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**39,166**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **% of MTDC (Rate: 63.0000, Base: 39166)**					
TOTAL INDIRECT COSTS (F&A)				**24,674**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**63,840**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **63,840**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*	DATE	FOR NSF USE ONLY
Roscoe Giles		INDIRECT COST RATE VERIFICATION
ORG. REP. TYPED NAME & SIGNATURE*	DATE	Date Checked / Date Of Rate Sheet / Initials - ORG

SUMMARY PROPOSAL BUDGET COMMENTS - Year 1

SUMMARY PROPOSAL BUDGET YEAR 2

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Boston University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Roscoe Giles**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Roscoe Giles - P.I.**	**0.00**	**0.00**	**0.00**	$ **0**	$
2. **Raquell M Holmes - Sr. Pers.**	**1.80**	**0.00**	**0.00**	**9,190**	
3.					
4.					
5.					
6. (**0**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**0.00**	**0**	
7. (**2**) TOTAL SENIOR PERSONNEL (1 - 6)	**1.80**	**0.00**	**0.00**	**9,190**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**0**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**0.00**	**0.00**	**0.00**	**0**	
3. (**1**) GRADUATE STUDENTS				**20,280**	
4. (**1**) UNDERGRADUATE STUDENTS				**5,200**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**34,670**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**1,902**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**36,572**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				**0**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**4,160**	
2. FOREIGN				**0**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**0**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**3,000**	
TOTAL OTHER DIRECT COSTS				**3,000**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**43,732**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **% of MTDC (Rate: 63.0000, Base: 43732)**					
TOTAL INDIRECT COSTS (F&A)				**27,551**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**71,283**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **71,283**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*	DATE	FOR NSF USE ONLY
Roscoe Giles		INDIRECT COST RATE VERIFICATION
ORG. REP. TYPED NAME & SIGNATURE*	DATE	Date Checked / Date Of Rate Sheet / Initials - ORG

SUMMARY PROPOSAL BUDGET YEAR 3

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Boston University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Roscoe Giles**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Roscoe Giles - P.I.**	**0.00**	**0.00**	**0.00**	$ **0**	$
2. **Raquell M Holmes - Sr. Pers.**	**1.80**	**0.00**	**0.00**	**9,558**	
3.					
4.					
5.					
6. (**0**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**0.00**	**0**	
7. (**2**) TOTAL SENIOR PERSONNEL (1 - 6)	**1.80**	**0.00**	**0.00**	**9,558**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**0**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**0.00**	**0.00**	**0.00**	**0**	
3. (**1**) GRADUATE STUDENTS				**21,091**	
4. (**1**) UNDERGRADUATE STUDENTS				**5,408**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**36,057**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**1,979**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**38,036**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				**0**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**4,326**	
2. FOREIGN				**0**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**0**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**0**	
TOTAL OTHER DIRECT COSTS				**0**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**42,362**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **% of MTDC (Rate: 63.0000, Base: 42362)**					
TOTAL INDIRECT COSTS (F&A)				**26,688**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**69,050**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **69,050**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*	DATE	FOR NSF USE ONLY
Roscoe Giles		INDIRECT COST RATE VERIFICATION
ORG. REP. TYPED NAME & SIGNATURE*	DATE	Date Checked / Date Of Rate Sheet / Initials - ORG

SUMMARY PROPOSAL BUDGET YEAR 4

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Boston University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Roscoe Giles**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Roscoe Giles - P.I.**	**0.00**	**0.00**	**0.00**	$ **0**	$
2. **Raquell M Holmes - Sr. Pers.**	**1.80**	**0.00**	**0.00**	**9,940**	
3.					
4.					
5.					
6. (**0**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**0.00**	**0**	
7. (**2**) TOTAL SENIOR PERSONNEL (1 - 6)	**1.80**	**0.00**	**0.00**	**9,940**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**0**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**0.00**	**0.00**	**0.00**	**0**	
3. (**1**) GRADUATE STUDENTS				**21,935**	
4. (**1**) UNDERGRADUATE STUDENTS				**5,624**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**37,499**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**2,058**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**39,557**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				**0**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**4,499**	
2. FOREIGN				**0**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**0**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**3,000**	
TOTAL OTHER DIRECT COSTS				**3,000**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**47,056**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **% of MTDC (Rate: 63.0000, Base: 47056)**					
TOTAL INDIRECT COSTS (F&A)				**29,645**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**76,701**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **76,701**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*: **Roscoe Giles** DATE

ORG. REP. TYPED NAME & SIGNATURE* DATE

FOR NSF USE ONLY

INDIRECT COST RATE VERIFICATION

Date Checked	Date Of Rate Sheet	Initials - ORG

SUMMARY PROPOSAL BUDGET

YEAR 5

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION
Boston University

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR
Roscoe Giles

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Roscoe Giles - P.I.**	**0.00**	**0.00**	**0.00**	$ **0**	$
2. **Raquell M Holmes - Sr. Pers.**	**1.80**	**0.00**	**0.00**	**10,338**	
3.					
4.					
5.					
6. (**0**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**0.00**	**0**	
7. (**2**) TOTAL SENIOR PERSONNEL (1 - 6)	**1.80**	**0.00**	**0.00**	**10,338**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**0**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**0.00**	**0.00**	**0.00**	**0**	
3. (**1**) GRADUATE STUDENTS				**22,812**	
4. (**1**) UNDERGRADUATE STUDENTS				**5,849**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**38,999**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**2,140**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**41,139**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				**0**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**4,679**	
2. FOREIGN				**0**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**0**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**3,000**	
TOTAL OTHER DIRECT COSTS				**3,000**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**48,818**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **%of MTDC (Rate: 63.0000, Base: 48818)**					
TOTAL INDIRECT COSTS (F&A)				**30,755**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**79,573**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **79,573**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*	DATE	FOR NSF USE ONLY
Roscoe Giles		INDIRECT COST RATE VERIFICATION
ORG. REP. TYPED NAME & SIGNATURE*	DATE	Date Checked / Date Of Rate Sheet / Initials - ORG

SUMMARY PROPOSAL BUDGET

Cumulative

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Boston University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Roscoe Giles**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Roscoe Giles - P.I.**	**0.00**	**0.00**	**0.00**	$ **0**	$
2. **Raquell M Holmes - Sr. Pers.**	**9.00**	**0.00**	**0.00**	**47,863**	
3.					
4.					
5.					
6. ( ) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**0.00**	**0**	
7. (**2**) TOTAL SENIOR PERSONNEL (1 - 6)	**9.00**	**0.00**	**0.00**	**47,863**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**0**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**0.00**	**0.00**	**0.00**	**0**	
3. (**5**) GRADUATE STUDENTS				**105,618**	
4. (**5**) UNDERGRADUATE STUDENTS				**27,081**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**180,562**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**9,908**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**190,470**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				**0**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**21,664**	
2. FOREIGN				**0**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**0**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**9,000**	
TOTAL OTHER DIRECT COSTS				**9,000**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**221,134**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE)					
TOTAL INDIRECT COSTS (F&A)				**139,314**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**360,448**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **360,448**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*	DATE	FOR NSF USE ONLY
Roscoe Giles		INDIRECT COST RATE VERIFICATION
ORG. REP. TYPED NAME & SIGNATURE*	DATE	Date Checked / Date Of Rate Sheet / Initials - ORG

NSF Form 1030 (10/99) Supersedes all previous editions

C***SIGNATURES REQUIRED ONLY FOR REVISED BUDGET (GPG III.B)**

Boston University Statement of Work and Budget Explanation

The objectives of the Boston University component of this project are to:

(1) Effect dissemination of courseware and materials developed by the project through the EOT-PACI repository.

Roscoe Giles (an EOT-PACI team leader) and Raquell Holmes (an EOT-PACI program manager) are responsible for the content and development of the www.eot.org Web-site and for the development of linked repositories of interest to the computational science education community. The Boston University team will incorporate courseware components such as reusable learning modules into the set of resources at the EOT-PACI site. We will also work directly with EOT-PACI constituencies to increase the level of awareness and interest in this project and its outcomes. R. Holmes, who manages the site support team, will coordinate this effort.

(2) Collaborate in the development of portal interfaces to courseware in the repository.

The EOT-PACI repositories are being migrated into educational portals that build on the technologies developed by the Alliance and NPACI in order to provide rich functionality for computational science education. The Boston University team will work closely with the technology team at Florida State to prototype technologies generated by the project and link them to the portal educational technologies of the Alliance. R. Giles will supervise a new computer engineering graduate student working in this area.

(3) Disseminate the results of this project to other MSI's through the ANMSI project.

EOT-PACI is working closely with EDUCAUSE on the Advanced Networking with Minority Serving Institutions (ANMSI, http://www.anms.org) project. The EOT-PACI component of this effort concentrates on making advanced network applications available to MSI participants through workshops, training, and general efforts to be sure that MSI faculty and staff are better represented in the national activities involving advanced network applications such as the Grid Forum and portals organizations. We will incorporate the results of this project into the framework of activities that we offer to MSI's through the ANMSI project. This can serve as an outreach vehicle to additional HBCUs as well as Hispanic Serving Institutions and Tribal Colleges. Allison Clark (NCSA) and R. Giles (BU) are principal contacts for the EOT-PACI ANMSI effort.

Boston University will hold 3 two day workshops (one each in years 2, 4 and 5) that will encourage MSI collaborators to make use of the results of this project.

Budget Explanation

Fringe benefits are charged at 20% for professional salaries.

Recurring costs are inflated at an annual rate of 4%

No salary is requested for R. Giles who will oversee the Boston University component of this project and supervise the graduate student. Support is requested for .5 FTE during the calendar year for R. Holmes who will lead the effort to incorporate modules from this effort into the repositories.

We have requested ongoing support for a computer engineering (or possibly computer science) graduate student who will work with R. Giles on creating prototypes of the technologies from this effort to be used for wider dissemination through the EOT-PACI educational portals and repository.

One or two undergraduate students will work on Web-site development (part time during the academic year and the summer).

Travel budget is requested to allow R. Holmes and R. Giles to attend the group meetings and to make 2 additional trips per year for outreach to MSI communities.

The budget requests funds for the cost of holding outreach workshops in years 2, 4 and 5

SUMMARY PROPOSAL BUDGET

YEAR 1

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION
Florida Agricultural and Mechanical University

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR
Sara Stoecklin

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Sara Stoecklin - P.I.**	**0.00**	**1.00**	**0.00**	$ **16,034**	$
2.					
3.					
4.					
5.					
6. (**0**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**0.00**	**0**	
7. (**1**) TOTAL SENIOR PERSONNEL (1 - 6)	**0.00**	**1.00**	**0.00**	**16,034**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**1**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**2.00**	**0.00**	**0.00**	**5,000**	
3. (**1**) GRADUATE STUDENTS				**3,000**	
4. (**0**) UNDERGRADUATE STUDENTS				**0**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**24,034**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**4,481**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**28,515**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
12 PC workstations @ $2700 ea $ **32,400**					
Network Equipment **900**					
Supporting equipment Printer **2,600**					
TOTAL EQUIPMENT				**35,900**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**5,000**	
2. FOREIGN				**3,000**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**5,300**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**4,500**	
TOTAL OTHER DIRECT COSTS				**9,800**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**82,215**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **100% MTDC (Rate: 42.5000, Base: 41814)**					
TOTAL INDIRECT COSTS (F&A)				**17,770**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**99,985**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **99,985**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*	DATE	FOR NSF USE ONLY
Sara Stoecklin		INDIRECT COST RATE VERIFICATION
ORG. REP. TYPED NAME & SIGNATURE*	DATE	Date Checked / Date Of Rate Sheet / Initials - ORG

SUMMARY PROPOSAL BUDGET COMMENTS - Year 1

SUMMARY PROPOSAL BUDGET YEAR 2

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION
Florida Agricultural and Mechanical University

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR
Sara Stoecklin

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Sara Stoecklin - P.I.**	**0.00**	**0.00**	**2.00**	$ **16,515**	$
2.					
3.					
4.					
5.					
6. (**0**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**0.00**	**0**	
7. (**1**) TOTAL SENIOR PERSONNEL (1 - 6)	**0.00**	**0.00**	**2.00**	**16,515**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**1**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**2.00**	**0.00**	**0.00**	**5,000**	
3. (**3**) GRADUATE STUDENTS				**9,000**	
4. (**2**) UNDERGRADUATE STUDENTS				**3,000**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**33,515**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**5,137**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**38,652**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
4 PC stations @ $2700 $ **10,800**					
Network Equipment **550**					
Supporting Equipment Video **5,600**					
TOTAL EQUIPMENT				**16,950**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**5,000**	
2. FOREIGN				**3,000**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**5,300**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**9,000**	
TOTAL OTHER DIRECT COSTS				**14,300**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**77,902**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE)					
100% MTDC (Rate: 42.5000, Base: 51952)					
TOTAL INDIRECT COSTS (F&A)				**22,079**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**99,981**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **99,981**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*
Sara Stoecklin
DATE

ORG. REP. TYPED NAME & SIGNATURE*
DATE

FOR NSF USE ONLY
INDIRECT COST RATE VERIFICATION

Date Checked	Date Of Rate Sheet	Initials - ORG

NSF Form 1030 (10/99) Supersedes all previous editions

***SIGNATURES REQUIRED ONLY FOR REVISED BUDGET (GPG III.B)**

SUMMARY PROPOSAL BUDGET — YEAR 3

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Florida Agricultural and Mechanical University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Sara Stoecklin**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Sara Stoecklin - P.I.**	**0.00**	**0.00**	**2.00**	$ **17,010**	$
2.					
3.					
4.					
5.					
6. (**0**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**0.00**	**0**	
7. (**1**) TOTAL SENIOR PERSONNEL (1 - 6)	**0.00**	**0.00**	**2.00**	**17,010**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**1**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**2.00**	**0.00**	**0.00**	**5,000**	
3. (**3**) GRADUATE STUDENTS				**9,000**	
4. (**2**) UNDERGRADUATE STUDENTS				**3,000**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**34,010**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**5,257**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**39,267**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
4 PC workstations @ $2700 $ **10,800**					
Network Equipment **800**					
Supporting Equipment Printer **4,500**					
TOTAL EQUIPMENT				**16,100**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**5,000**	
2. FOREIGN				**3,000**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**5,300**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**9,000**	
TOTAL OTHER DIRECT COSTS				**14,300**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**77,667**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **100% MTDC (Rate: 42.5000, Base: 52568)**					
TOTAL INDIRECT COSTS (F&A)				**22,341**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**100,008**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **100,008**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*	DATE	FOR NSF USE ONLY
Sara Stoecklin		INDIRECT COST RATE VERIFICATION
ORG. REP. TYPED NAME & SIGNATURE*	DATE	Date Checked / Date Of Rate Sheet / Initials - ORG

SUMMARY PROPOSAL BUDGET

YEAR 4

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION
Florida Agricultural and Mechanical University

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR
Sara Stoecklin

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Sara Stoecklin - P.I.**	**0.00**	**0.00**	**2.00**	$ **17,521**	$
2.					
3.					
4.					
5.					
6. (**0**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**0.00**	**0**	
7. (**1**) TOTAL SENIOR PERSONNEL (1 - 6)	**0.00**	**0.00**	**2.00**	**17,521**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**1**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**4.00**	**0.00**	**0.00**	**5,000**	
3. (**3**) GRADUATE STUDENTS				**9,000**	
4. (**2**) UNDERGRADUATE STUDENTS				**3,000**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**34,521**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**5,381**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**39,902**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
4 PC Workstations @ $2700 $ **10,800**					
Network Equipment **800**					
Supporting Equipment Teleconf **3,470**					
TOTAL EQUIPMENT				**15,070**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**5,000**	
2. FOREIGN				**3,000**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**5,300**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**9,000**	
TOTAL OTHER DIRECT COSTS				**14,300**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**77,272**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **100% MTDC (Rate: 42.5000, Base: 53202)**					
TOTAL INDIRECT COSTS (F&A)				**22,610**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**99,882**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **99,882**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*	DATE	FOR NSF USE ONLY
Sara Stoecklin		INDIRECT COST RATE VERIFICATION
ORG. REP. TYPED NAME & SIGNATURE*	DATE	Date Checked / Date Of Rate Sheet / Initials - ORG

SUMMARY PROPOSAL BUDGET

YEAR 5

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION
Florida Agricultural and Mechanical University

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR
Sara Stoecklin

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Sara Stoecklin - P.I.**	**0.00**	**0.00**	**2.00**	$ **18,046**	$
2.					
3.					
4.					
5.					
6. (**0**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**0.00**	**0**	
7. (**1**) TOTAL SENIOR PERSONNEL (1 - 6)	**0.00**	**0.00**	**2.00**	**18,046**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**1**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**4.00**	**0.00**	**0.00**	**5,000**	
3. (**3**) GRADUATE STUDENTS				**9,000**	
4. (**2**) UNDERGRADUATE STUDENTS				**3,000**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**35,046**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**5,509**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**40,555**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
4 PC workstations @ $2700 $ **10,800**					
Network Equipment **400**					
Supporting Equipment Teaching **2,600**					
TOTAL EQUIPMENT				**13,800**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**5,000**	
2. FOREIGN				**3,000**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**5,600**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**9,000**	
TOTAL OTHER DIRECT COSTS				**14,600**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**76,955**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **100% MTDC (Rate: 42.5000, Base: 54155)**					
TOTAL INDIRECT COSTS (F&A)				**23,015**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**99,970**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **99,970**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*	DATE	FOR NSF USE ONLY
Sara Stoecklin		INDIRECT COST RATE VERIFICATION
ORG. REP. TYPED NAME & SIGNATURE*	DATE	Date Checked / Date Of Rate Sheet / Initials - ORG

SUMMARY PROPOSAL BUDGET

Cumulative

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION
Florida Agricultural and Mechanical University

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR
Sara Stoecklin

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Sara Stoecklin - P.I.**	**0.00**	**1.00**	**8.00**	$ **85,126**	$
2.					
3.					
4.					
5.					
6. ( ) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**0.00**	**0**	
7. (**1**) TOTAL SENIOR PERSONNEL (1 - 6)	**0.00**	**1.00**	**8.00**	**85,126**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**5**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**14.00**	**0.00**	**0.00**	**25,000**	
3. (**13**) GRADUATE STUDENTS				**39,000**	
4. (**8**) UNDERGRADUATE STUDENTS				**12,000**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**161,126**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**25,765**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**186,891**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.) **$ 97,820**					
TOTAL EQUIPMENT				**97,820**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**25,000**	
2. FOREIGN				**15,000**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**26,800**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**40,500**	
TOTAL OTHER DIRECT COSTS				**67,300**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**392,011**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE)					
TOTAL INDIRECT COSTS (F&A)				**107,818**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**499,829**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **499,829**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*
Sara Stoecklin

DATE

ORG. REP. TYPED NAME & SIGNATURE*

DATE

FOR NSF USE ONLY

INDIRECT COST RATE VERIFICATION

Date Checked	Date Of Rate Sheet	Initials - ORG

NSF Form 1030 (10/99) Supersedes all previous editions

C***SIGNATURES REQUIRED ONLY FOR REVISED BUDGET (GPG III.B)**

FAMU BUDGET JUSTIFICATION

FAMU plans to implement reusable object-modules from this project into their curriculum. Implementation includes development of some modules, integration of modules, and evaluation of modules. This requires one faculty member time to coordinate this initial implementation with time for visitations to the FSU campus to co-ordinate this implementation.

Teaching Assistant Exchange for one TA will be implemented to allow a FAMU student to spend a semester at FSU serving as a TA on modules developed at FSU so them can return and integrate and evaluate those modules at FAMU.

Research Assistants at FAMU to aid in module development, perform evaluations, and compile assessments of the effectiveness of materials. Additionally these students will aid in the day-to-day interaction between the repository modules and their continuing implementation at FAMU.

Laboratory Assistant money to keep up-and-running the necessary environment for the project. This would be part-time help.

Travel money to attend educational conferences, attend project meetings, and organize equipment and environments according to the needs of the supplied modules.

Money to establish an electronic classroom for the presentation of these reusable modules. This includes any network support or set up equipment.

SUMMARY PROPOSAL BUDGET

YEAR 1

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION
Jackson State University

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR
Willie G Brown

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Willie G Brown - P.I.**	**0.00**	**0.00**	**0.00**	$ **0**	$
2.					
3.					
4.					
5.					
6. (**0**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**0.00**	**0**	
7. (**1**) TOTAL SENIOR PERSONNEL (1 - 6)	**0.00**	**0.00**	**0.00**	**0**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**1**) POST DOCTORAL ASSOCIATES	**6.00**	**0.00**	**0.00**	**20,000**	
2. (**0**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**0.00**	**0.00**	**0.00**	**0**	
3. (**1**) GRADUATE STUDENTS				**24,000**	
4. (**1**) UNDERGRADUATE STUDENTS				**16,800**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**1**) OTHER				**43,333**	
TOTAL SALARIES AND WAGES (A + B)				**104,133**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**16,783**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**120,916**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.) **Computers** $ **25,000**					
TOTAL EQUIPMENT				**25,000**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**6,000**	
2. FOREIGN				**0**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**1,744**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**0**	
TOTAL OTHER DIRECT COSTS				**1,744**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**153,660**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **salary (Rate: 44.5000, Base: 104133)**					
TOTAL INDIRECT COSTS (F&A)				**46,339**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**199,999**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **199,999**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*	DATE	FOR NSF USE ONLY
Willie G Brown		INDIRECT COST RATE VERIFICATION
ORG. REP. TYPED NAME & SIGNATURE*	DATE	Date Checked / Date Of Rate Sheet / Initials - ORG

SUMMARY PROPOSAL BUDGET COMMENTS - Year 1

SUMMARY PROPOSAL BUDGET YEAR 2

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Jackson State University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Willie G Brown**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Willie G Brown - P.I.**	**0.00**	**0.00**	**0.00**	$ **0**	$
2.					
3.					
4.					
5.					
6. (**0**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**0.00**	**0**	
7. (**1**) TOTAL SENIOR PERSONNEL (1 - 6)	**0.00**	**0.00**	**0.00**	**0**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**1**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**6.00**	**0.00**	**0.00**	**21,000**	
3. (**1**) GRADUATE STUDENTS				**24,000**	
4. (**1**) UNDERGRADUATE STUDENTS				**16,800**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**1**) OTHER				**45,500**	
TOTAL SALARIES AND WAGES (A + B)				**107,300**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**17,623**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**124,923**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.) **Computers** $ **19,585**					
TOTAL EQUIPMENT				**19,585**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**6,000**	
2. FOREIGN				**0**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**1,744**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**0**	
TOTAL OTHER DIRECT COSTS				**1,744**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**152,252**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **salary (Rate: 44.5000, Base: 107300)**					
TOTAL INDIRECT COSTS (F&A)				**47,748**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**200,000**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **200,000**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*: **Willie G Brown** DATE

ORG. REP. TYPED NAME & SIGNATURE* DATE

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Date Checked	Date Of Rate Sheet	Initials - ORG

SUMMARY PROPOSAL BUDGET

YEAR 3

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Jackson State University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Willie G Brown**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Willie G Brown - P.I.**	**0.00**	**0.00**	**0.00**	$ **0**	$
2.					
3.					
4.					
5.					
6. (**0**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**0.00**	**0**	
7. (**1**) TOTAL SENIOR PERSONNEL (1 - 6)	**0.00**	**0.00**	**0.00**	**0**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**1**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**6.00**	**0.00**	**0.00**	**22,050**	
3. (**1**) GRADUATE STUDENTS				**24,000**	
4. (**1**) UNDERGRADUATE STUDENTS				**16,800**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**1**) OTHER				**47,775**	
TOTAL SALARIES AND WAGES (A + B)				**110,625**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**18,504**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**129,129**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.) **Computers** $ **13,899**					
TOTAL EQUIPMENT				**13,899**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**6,000**	
2. FOREIGN				**0**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**1,744**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**0**	
TOTAL OTHER DIRECT COSTS				**1,744**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**150,772**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **salary (Rate: 44.5000, Base: 110625)**					
TOTAL INDIRECT COSTS (F&A)				**49,228**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**200,000**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **200,000**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*: **Willie G Brown** DATE

ORG. REP. TYPED NAME & SIGNATURE* DATE

FOR NSF USE ONLY

INDIRECT COST RATE VERIFICATION

Date Checked	Date Of Rate Sheet	Initials - ORG

SUMMARY PROPOSAL BUDGET

YEAR 4

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION
Jackson State University

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR
Willie G Brown

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Willie G Brown - P.I.**	**0.00**	**0.00**	**0.00**	$ **0**	$
2.					
3.					
4.					
5.					
6. (**0**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**0.00**	**0**	
7. (**1**) TOTAL SENIOR PERSONNEL (1 - 6)	**0.00**	**0.00**	**0.00**	**0**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**1**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**6.00**	**0.00**	**0.00**	**23,153**	
3. (**1**) GRADUATE STUDENTS				**24,000**	
4. (**1**) UNDERGRADUATE STUDENTS				**16,800**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**1**) OTHER				**50,164**	
TOTAL SALARIES AND WAGES (A + B)				**114,117**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**19,429**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**133,546**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.) **Computers** $ **7,929**					
TOTAL EQUIPMENT				**7,929**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**6,000**	
2. FOREIGN				**0**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**1,744**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**0**	
TOTAL OTHER DIRECT COSTS				**1,744**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**149,219**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **salary (Rate: 44.5000, Base: 114117)**					
TOTAL INDIRECT COSTS (F&A)				**50,782**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**200,001**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **200,001**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*
Willie G Brown

DATE

ORG. REP. TYPED NAME & SIGNATURE*

DATE

FOR NSF USE ONLY

INDIRECT COST RATE VERIFICATION

Date Checked	Date Of Rate Sheet	Initials - ORG

SUMMARY PROPOSAL BUDGET

YEAR 5

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION
Jackson State University

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR
Willie G Brown

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Willie G Brown - P.I.**	**0.00**	**0.00**	**0.00**	$ **0**	$
2.					
3.					
4.					
5.					
6. (**0**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**0.00**	**0**	
7. (**1**) TOTAL SENIOR PERSONNEL (1 - 6)	**0.00**	**0.00**	**0.00**	**0**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**1**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**6.00**	**0.00**	**0.00**	**24,310**	
3. (**1**) GRADUATE STUDENTS				**24,000**	
4. (**1**) UNDERGRADUATE STUDENTS				**16,800**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**1**) OTHER				**52,672**	
TOTAL SALARIES AND WAGES (A + B)				**117,782**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**20,400**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**138,182**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.) **computers** $ **1,661**					
TOTAL EQUIPMENT				**1,661**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**6,000**	
2. FOREIGN				**0**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**1,744**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**0**	
TOTAL OTHER DIRECT COSTS				**1,744**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**147,587**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **salary (Rate: 44.5000, Base: 117782)**					
TOTAL INDIRECT COSTS (F&A)				**52,412**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**199,999**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **199,999**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*
Willie G Brown

DATE

ORG. REP. TYPED NAME & SIGNATURE*

DATE

FOR NSF USE ONLY

INDIRECT COST RATE VERIFICATION

Date Checked	Date Of Rate Sheet	Initials - ORG

SUMMARY PROPOSAL BUDGET

Cumulative

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Jackson State University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Willie G Brown**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Willie G Brown - P.I.**	**0.00**	**0.00**	**0.00**	$ **0**	$
2.					
3.					
4.					
5.					
6. ( ) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**0.00**	**0**	
7. (**1**) TOTAL SENIOR PERSONNEL (1 - 6)	**0.00**	**0.00**	**0.00**	**0**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**1**) POST DOCTORAL ASSOCIATES	**6.00**	**0.00**	**0.00**	**20,000**	
2. (**4**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**24.00**	**0.00**	**0.00**	**90,513**	
3. (**5**) GRADUATE STUDENTS				**120,000**	
4. (**5**) UNDERGRADUATE STUDENTS				**84,000**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**5**) OTHER				**239,444**	
TOTAL SALARIES AND WAGES (A + B)				**553,957**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**92,739**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**646,696**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.) $ **68,074**					
TOTAL EQUIPMENT				**68,074**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**30,000**	
2. FOREIGN				**0**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**8,720**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**0**	
TOTAL OTHER DIRECT COSTS				**8,720**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**753,490**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE)					
TOTAL INDIRECT COSTS (F&A)				**246,510**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**1,000,000**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **1,000,000**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*: **Willie G Brown** DATE

ORG. REP. TYPED NAME & SIGNATURE* DATE

FOR NSF USE ONLY

INDIRECT COST RATE VERIFICATION

Date Checked	Date Of Rate Sheet	Initials - ORG

NSF Form 1030 (10/99) Supersedes all previous editions

C***SIGNATURES REQUIRED ONLY FOR REVISED BUDGET (GPG III.B)**

Budget Justification

A. Senior Personnel

Dr. Willie G. Brown will direct this project for JSU. No funds are requested from NSF for senior personnel. 10% of Dr. Brown's time is contributed by JSU as in-kind cost-sharing.

B. Other Personnel

2. Technical support will be required to support instructional technology techniques and tools. This proposal requests $20,000 for the first year, representing 50% support for a classroom technician to install and maintain equipment, load software, and provide other technical support as necessary. Subsequent years' salaries include standard 5% increases. The other 50% of the technician's salary is considered part of JSU's cost sharing.
   Total Requested: $110,513 over 5 years
3. Support is requested for 2 graduate students at $12,000 per year. The graduate students will assist with class preparation, grading, technical support, and research activities as necessary and appropriate.
   Total Requested: $120,000 over 5 years
4. Support is requested for 2 undergraduate students at $8,400 per year. The students will assist with class preparation, grading, technical support, and research activities as necessary and appropriate.
   Total Requested: $84,000 over 5 years
5. Secretarial – None
6. Salary for 25% release time and 1 summer month, for 2 faculty members, is requested in this proposal. The faculty members will contribute to course development, teach courses, and help train other faculty members.
   Total Requested: $239,444 over 5 years

C. Fringe Benefits

26.5% of salaries, excluding graduate and undergraduate student salaries.

Total Requested: $92,739 over 5 years

D. Equipment

Equipment includes computers and networking hardware necessary to supplement electronic classroom implementation at HBCU sites. Acquisition will be heaviest at startup and will taper off as the project continues.

Total Requested: $68,074 over 5 years

E. Travel

Travel funds are requested for coordination and meetings.

Total Requested: $30,000 over 5 years

G. Other Direct Costs

1. Materials and Supplies – Miscellaneous

Total Requested: $8,720 over 5 years

I. Indirect Costs

44.5% of all salaries

Total Requested: $246,510 over 5 years

SUMMARY PROPOSAL BUDGET YEAR 1

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Mississippi State University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Joe Thompson**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Joe Thompson - PI**	**0.00**	**0.00**	**0.00**	$ **0**	$
2. **Donna S Reese - Sr. Pers.**	**0.00**	**0.00**	**2.00**	**17,046**	
3.					
4.					
5.					
6. (**0**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**0.00**	**0**	
7. (**2**) TOTAL SENIOR PERSONNEL (1 - 6)	**0.00**	**0.00**	**2.00**	**17,046**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**0**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**0.00**	**0.00**	**0.00**	**0**	
3. (**1**) GRADUATE STUDENTS				**12,000**	
4. (**0**) UNDERGRADUATE STUDENTS				**0**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**29,046**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**6,981**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**36,027**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				**0**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**0**	
2. FOREIGN				**0**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**85**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**86**	
TOTAL OTHER DIRECT COSTS				**171**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**36,198**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **Modified Direct Costs (Rate: 41.5000, Base: 33258)**					
TOTAL INDIRECT COSTS (F&A)				**13,802**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**50,000**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **50,000**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*: **Joe Thompson** DATE

ORG. REP. TYPED NAME & SIGNATURE* DATE

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Date Checked	Date Of Rate Sheet	Initials - ORG

SUMMARY PROPOSAL BUDGET COMMENTS - Year 1

SUMMARY PROPOSAL BUDGET YEAR 2

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Mississippi State University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Joe Thompson**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Joe Thompson - PI**	**0.00**	**0.00**	**0.00**	$ **0**	$
2. **Donna S Reese - Sr. Pers.**	**0.00**	**0.00**	**1.75**	**15,661**	
3.					
4.					
5.					
6. (**0**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**0.00**	**0**	
7. (**2**) TOTAL SENIOR PERSONNEL (1 - 6)	**0.00**	**0.00**	**1.75**	**15,661**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**0**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**0.00**	**0.00**	**0.00**	**0**	
3. (**1**) GRADUATE STUDENTS				**12,000**	
4. (**0**) UNDERGRADUATE STUDENTS				**0**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**27,661**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**6,809**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**34,470**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				**0**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**1,000**	
2. FOREIGN				**0**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**385**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**386**	
TOTAL OTHER DIRECT COSTS				**771**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**36,241**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **Modified Dir (Rate: 41.5000, Base: 33155)**					
TOTAL INDIRECT COSTS (F&A)				**13,759**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**50,000**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **50,000**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*: **Joe Thompson** DATE

ORG. REP. TYPED NAME & SIGNATURE* DATE

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INDIRECT COST RATE VERIFICATION

Date Checked	Date Of Rate Sheet	Initials - ORG

SUMMARY PROPOSAL BUDGET YEAR 3

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION
Mississippi State University

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR
Joe Thompson

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Joe Thompson - PI**	**0.00**	**0.00**	**0.00**	$ **0**	$
2. **Donna S Reese - Sr. Pers.**	**0.00**	**0.00**	**1.75**	**16,444**	
3.					
4.					
5.					
6. (**0**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**0.00**	**0**	
7. (**2**) TOTAL SENIOR PERSONNEL (1 - 6)	**0.00**	**0.00**	**1.75**	**16,444**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**0**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**0.00**	**0.00**	**0.00**	**0**	
3. (**1**) GRADUATE STUDENTS				**12,000**	
4. (**0**) UNDERGRADUATE STUDENTS				**0**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**28,444**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**7,143**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**35,587**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				**0**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**500**	
2. FOREIGN				**0**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**100**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**99**	
TOTAL OTHER DIRECT COSTS				**199**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**36,286**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **Modified Direct Costs (Rate: 41.5000, Base: 33046)**					
TOTAL INDIRECT COSTS (F&A)				**13,714**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**50,000**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **50,000**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*
Joe Thompson
DATE

ORG. REP. TYPED NAME & SIGNATURE*
DATE

FOR NSF USE ONLY		
INDIRECT COST RATE VERIFICATION		
Date Checked	Date Of Rate Sheet	Initials - ORG

SUMMARY PROPOSAL BUDGET YEAR 4

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Mississippi State University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Joe Thompson**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Joe Thompson - PI**	**0.00**	**0.00**	**0.00**	$ **0**	$
2. **Donna S Reese - Sr. Pers.**	**0.00**	**0.00**	**1.50**	**14,800**	
3.					
4.					
5.					
6. (**0**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**0.00**	**0**	
7. (**2**) TOTAL SENIOR PERSONNEL (1 - 6)	**0.00**	**0.00**	**1.50**	**14,800**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**0**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**0.00**	**0.00**	**0.00**	**0**	
3. (**1**) GRADUATE STUDENTS				**12,000**	
4. (**0**) UNDERGRADUATE STUDENTS				**0**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**26,800**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**6,926**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**33,726**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				**0**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**1,500**	
2. FOREIGN				**0**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**554**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**554**	
TOTAL OTHER DIRECT COSTS				**1,108**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**36,334**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **Modified Direct Costs (Rate: 41.5000, Base: 32931)**					
TOTAL INDIRECT COSTS (F&A)				**13,666**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**50,000**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **50,000**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*	DATE	FOR NSF USE ONLY
Joe Thompson		INDIRECT COST RATE VERIFICATION
ORG. REP. TYPED NAME & SIGNATURE*	DATE	Date Checked / Date Of Rate Sheet / Initials - ORG

SUMMARY PROPOSAL BUDGET

YEAR 5

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION
Mississippi State University

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR
Joe Thompson

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Joe Thompson - PI**	**0.00**	**0.00**	**0.00**	$ **0**	$
2. **Donna S Reese - Sr. Pers.**	**0.00**	**0.00**	**1.50**	**15,540**	
3.					
4.					
5.					
6. (**0**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**0.00**	**0**	
7. (**2**) TOTAL SENIOR PERSONNEL (1 - 6)	**0.00**	**0.00**	**1.50**	**15,540**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**0**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**0.00**	**0.00**	**0.00**	**0**	
3. (**1**) GRADUATE STUDENTS				**12,000**	
4. (**0**) UNDERGRADUATE STUDENTS				**0**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**27,540**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**7,269**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**34,809**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				**0**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**1,100**	
2. FOREIGN				**0**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**238**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**237**	
TOTAL OTHER DIRECT COSTS				**475**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**36,384**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **Modified Direct Costs (Rate: 41.5000, Base: 32810)**					
TOTAL INDIRECT COSTS (F&A)				**13,616**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**50,000**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **50,000**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*	DATE	FOR NSF USE ONLY
Joe Thompson		INDIRECT COST RATE VERIFICATION
ORG. REP. TYPED NAME & SIGNATURE*	DATE	Date Checked / Date Of Rate Sheet / Initials - ORG

SUMMARY PROPOSAL BUDGET

Cumulative

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Mississippi State University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Joe Thompson**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Joe Thompson - PI**	**0.00**	**0.00**	**0.00**	$ **0**	$
2. **Donna S Reese - Sr. Pers.**	**0.00**	**0.00**	**8.50**	**79,491**	
3.					
4.					
5.					
6. ( ) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**0.00**	**0**	
7. (**2**) TOTAL SENIOR PERSONNEL (1 - 6)	**0.00**	**0.00**	**8.50**	**79,491**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**0**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**0.00**	**0.00**	**0.00**	**0**	
3. (**5**) GRADUATE STUDENTS				**60,000**	
4. (**0**) UNDERGRADUATE STUDENTS				**0**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**139,491**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**35,128**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**174,619**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				**0**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**4,100**	
2. FOREIGN				**0**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**1,362**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**0**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**1,362**	
TOTAL OTHER DIRECT COSTS				**2,724**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**181,443**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE)					
TOTAL INDIRECT COSTS (F&A)				**68,558**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**250,001**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **250,001**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*	DATE	FOR NSF USE ONLY
Joe Thompson		INDIRECT COST RATE VERIFICATION
ORG. REP. TYPED NAME & SIGNATURE*	DATE	Date Checked / Date Of Rate Sheet / Initials - ORG

NSF Form 1030 (10/99) Supersedes all previous editions

C***SIGNATURES REQUIRED ONLY FOR REVISED BUDGET (GPG III.B)**

Proposed Budget: NSHTP Program

Period of Performance: September 1, 2024 - August 31, 2029
5% raise calculated on 1st for 1st tuition annually

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
I. Salaries and Wages						
a. Joe Thompson, Project Co-PI N/A	0	0	0	0	0	0
b. Donna Reese, MSU PI $5,000 academic @ 3 mr mths Yr 2 & 3 $5,150 mr mth, Yr 4 & 5 $5,305						
c. 1 Graduate Research Assistant $20,000 annual @ 50%						
II. Fringe Benefits						
a. 1.-1.c. above @ 30%						
b. 1.c. above @ 1%						
c. 1 Grad Student tuition @ $500/month						
III. Services						
IV. Supplies						
V. Travel						
TOTAL DIRECT COSTS						
INDIRECT COSTS @ 50% (Excludes tuition)						
TOTAL PROJECT COST						

SUMMARY PROPOSAL BUDGET YEAR 1

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Morgan State University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Shiri Byron**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Shiri Byron - Sr. Person**	**3.00**	**0.00**	**0.00**	$ **12,000**	$
2. **William L Lupton - PI**	**0.00**	**0.00**	**0.00**	**0**	
3.					
4.					
5.					
6. (**0**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**0.00**	**0**	
7. (**2**) TOTAL SENIOR PERSONNEL (1 - 6)	**3.00**	**0.00**	**0.00**	**12,000**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**0**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**0.00**	**0.00**	**0.00**	**0**	
3. (**2**) GRADUATE STUDENTS				**8,000**	
4. (**0**) UNDERGRADUATE STUDENTS				**0**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**20,000**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**5,000**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**25,000**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.) **Equipment & Accessories** $ **14,000**					
TOTAL EQUIPMENT				**14,000**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**5,000**	
2. FOREIGN				**0**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**2,500**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**3,000**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**500**	
TOTAL OTHER DIRECT COSTS				**6,000**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**50,000**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **(Rate: , Base:)**					
TOTAL INDIRECT COSTS (F&A)				**0**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**50,000**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **50,000**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*	DATE	FOR NSF USE ONLY
Shiri Byron		INDIRECT COST RATE VERIFICATION
ORG. REP. TYPED NAME & SIGNATURE*	DATE	Date Checked / Date Of Rate Sheet / Initials - ORG

SUMMARY PROPOSAL BUDGET COMMENTS - Year 1

SUMMARY PROPOSAL BUDGET YEAR 2

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Morgan State University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Shiri Byron**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Shiri Byron - Sr. Person**	**3.00**	**0.00**	**0.00**	$ **12,000**	$
2. **William L Lupton - PI**	**0.00**	**0.00**	**0.00**	**0**	
3.					
4.					
5.					
6. (**0**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**0.00**	**0**	
7. (**2**) TOTAL SENIOR PERSONNEL (1 - 6)	**3.00**	**0.00**	**0.00**	**12,000**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**0**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**0.00**	**0.00**	**0.00**	**0**	
3. (**2**) GRADUATE STUDENTS				**8,000**	
4. (**0**) UNDERGRADUATE STUDENTS				**0**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**20,000**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**5,000**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**25,000**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.) **Equipment & Accessories** $ **14,000**					
TOTAL EQUIPMENT				**14,000**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**5,000**	
2. FOREIGN				**0**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**2,500**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**3,000**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**500**	
TOTAL OTHER DIRECT COSTS				**6,000**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**50,000**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **(Rate: , Base:)**					
TOTAL INDIRECT COSTS (F&A)				**0**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**50,000**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **50,000**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*: **Shiri Byron** DATE

ORG. REP. TYPED NAME & SIGNATURE* DATE

FOR NSF USE ONLY		
INDIRECT COST RATE VERIFICATION		
Date Checked	Date Of Rate Sheet	Initials - ORG

SUMMARY PROPOSAL BUDGET YEAR 3

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Morgan State University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Shiri Byron**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Shiri Byron - Sr. Person**	**3.00**	**0.00**	**0.00**	$ **12,000**	$
2. **William L Lupton**	**0.00**	**0.00**	**0.00**	**0**	
3.					
4.					
5.					
6. (**0**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**0.00**	**0**	
7. (**2**) TOTAL SENIOR PERSONNEL (1 - 6)	**3.00**	**0.00**	**0.00**	**12,000**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**0**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**0.00**	**0.00**	**0.00**	**0**	
3. (**2**) GRADUATE STUDENTS				**8,000**	
4. (**0**) UNDERGRADUATE STUDENTS				**0**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**20,000**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**5,000**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**25,000**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.) **Equipment & Accessories** $ **14,000**					
TOTAL EQUIPMENT				**14,000**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**5,000**	
2. FOREIGN				**0**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**2,500**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**3,000**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**500**	
TOTAL OTHER DIRECT COSTS				**6,000**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**50,000**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **(Rate: , Base:)**					
TOTAL INDIRECT COSTS (F&A)				**0**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**50,000**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **50,000**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE* **Shiri Byron**	DATE	FOR NSF USE ONLY INDIRECT COST RATE VERIFICATION
ORG. REP. TYPED NAME & SIGNATURE*	DATE	Date Checked / Date Of Rate Sheet / Initials - ORG

SUMMARY PROPOSAL BUDGET

YEAR 4

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Morgan State University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Shiri Byron**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Shiri Byron - Sr Person**	**3.00**	**0.00**	**0.00**	$ **12,000**	$
2. **William L Lupton - OI**	**0.00**	**0.00**	**0.00**	**0**	
3.					
4.					
5.					
6. (**0**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**0.00**	**0**	
7. (**2**) TOTAL SENIOR PERSONNEL (1 - 6)	**3.00**	**0.00**	**0.00**	**12,000**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**0**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**0.00**	**0.00**	**0.00**	**0**	
3. (**2**) GRADUATE STUDENTS				**8,000**	
4. (**0**) UNDERGRADUATE STUDENTS				**0**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**20,000**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**5,000**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**25,000**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.) **Equipment and Accessories** $ **14,000**					
TOTAL EQUIPMENT				**14,000**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**5,000**	
2. FOREIGN				**0**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**2,500**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**3,000**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**500**	
TOTAL OTHER DIRECT COSTS				**6,000**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**50,000**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **(Rate: , Base:)**					
TOTAL INDIRECT COSTS (F&A)				**0**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**50,000**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **50,000**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*: **Shiri Byron** DATE

ORG. REP. TYPED NAME & SIGNATURE* DATE

FOR NSF USE ONLY		
INDIRECT COST RATE VERIFICATION		
Date Checked	Date Of Rate Sheet	Initials - ORG

SUMMARY PROPOSAL BUDGET

YEAR 5

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Morgan State University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Shiri Byron**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Shiri Byron - Sr. Person**	**3.00**	**0.00**	**0.00**	$ **12,000**	$
2. **William L Lupton - PI**	**0.00**	**0.00**	**0.00**	**0**	
3.					
4.					
5.					
6. (**0**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**0.00**	**0**	
7. (**2**) TOTAL SENIOR PERSONNEL (1 - 6)	**3.00**	**0.00**	**0.00**	**12,000**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**0**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**0.00**	**0.00**	**0.00**	**0**	
3. (**2**) GRADUATE STUDENTS				**8,000**	
4. (**0**) UNDERGRADUATE STUDENTS				**0**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**20,000**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**5,000**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**25,000**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.) **Equipment & Accessories** $ **14,000**					
TOTAL EQUIPMENT				**14,000**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**5,000**	
2. FOREIGN				**0**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**2,500**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**3,000**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**500**	
TOTAL OTHER DIRECT COSTS				**6,000**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**50,000**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **(Rate: , Base:)**					
TOTAL INDIRECT COSTS (F&A)				**0**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**50,000**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **50,000**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*	DATE	FOR NSF USE ONLY
Shiri Byron		INDIRECT COST RATE VERIFICATION
ORG. REP. TYPED NAME & SIGNATURE*	DATE	Date Checked / Date Of Rate Sheet / Initials - ORG

SUMMARY PROPOSAL BUDGET

Cumulative

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Morgan State University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Shiri Byron**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Shiri Byron - Sr Person**	**15.00**	**0.00**	**0.00**	$ **60,000**	$
2. **William L Lupton**	**0.00**	**0.00**	**0.00**	**0**	
3.					
4.					
5.					
6. ( ) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	**0.00**	**0.00**	**0.00**	**0**	
7. (**2**) TOTAL SENIOR PERSONNEL (1 - 6)	**15.00**	**0.00**	**0.00**	**60,000**	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL ASSOCIATES	**0.00**	**0.00**	**0.00**	**0**	
2. (**0**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	**0.00**	**0.00**	**0.00**	**0**	
3. (**10**) GRADUATE STUDENTS				**40,000**	
4. (**0**) UNDERGRADUATE STUDENTS				**0**	
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				**0**	
6. (**0**) OTHER				**0**	
TOTAL SALARIES AND WAGES (A + B)				**100,000**	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				**25,000**	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**125,000**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.) $ **70,000**					
TOTAL EQUIPMENT				**70,000**	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				**25,000**	
2. FOREIGN				**0**	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ **0**					
2. TRAVEL **0**					
3. SUBSISTENCE **0**					
4. OTHER **0**					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS				**0**	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				**12,500**	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				**0**	
3. CONSULTANT SERVICES				**15,000**	
4. COMPUTER SERVICES				**0**	
5. SUBAWARDS				**0**	
6. OTHER				**2,500**	
TOTAL OTHER DIRECT COSTS				**30,000**	
H. TOTAL DIRECT COSTS (A THROUGH G)				**250,000**	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE)					
TOTAL INDIRECT COSTS (F&A)				**0**	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**250,000**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				**0**	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ **250,000**	$

M. COST SHARING PROPOSED LEVEL $ **0** AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*: **Shiri Byron** DATE

ORG. REP. TYPED NAME & SIGNATURE* DATE

FOR NSF USE ONLY

INDIRECT COST RATE VERIFICATION

Date Checked	Date Of Rate Sheet	Initials - ORG

NSF Form 1030 (10/99) Supersedes all previous editions

C***SIGNATURES REQUIRED ONLY FOR REVISED BUDGET (GPG III.B)**

Morgan State University
Budget Justification
Information Technology Research (ITR) Proposal

A., B., and C, Salaries, Wages and Fringe Benefits.

Beside the Dr. Lupton, the one other senior personnel is to be Shirl Byron. The requested person months to be funded is 15 (total) at approximately $4,000/mo.

D. Equipment.

Acquisition costs of equipment needed to establish the appropriate classroom and research environment for conducting the project.-----$5,000.

Equipment accessories and peripherals necessary to maintain current with the technology.----$5,000.

General purpose equipment for maintaining an office environment.---$4,000.

E. Travel.

Cost represents expenses related to the progress, promotion, study and implementation of project objectives. Travel sites will be between the partner schools over the term of the project.----$25,000.

G. Other Direct Costs.

1. Materials and Supplies-Necessary to carry out the project over the term of the agreement and less than $5,000.
3. Consultant Services-To be hired to structure and evaluate research objectives and outcomes.-----$15,000.
6. Other-Miscellaneous costs related and expected to be incurred in connection with servicing the project.------$2,500.

L. Amount of Request.

Amount of request represents the cost anticipated to satisfactorily research, administer report and publish findings on the project.-----$250,000.

Prepared by

Dr. William Lupton , Chair
Computer Science Department
Morgan State University
April 6, 2000

Investigator: **Geoffrey C. Fox**

Support: **Current**
Project/Proposal Title: **Education Technology and Science Portals**
Source of Support: **University of Illinois (NCSA)**
Total Award Amount: $225,000.
Location of Project: Florida State University
Period covered: 10/01/99 - 09/30/00
Person-Months Per Year Committed to the Project. Cal: **0.25**

Support: **Current**
Project/Proposal Title: **Performance Estimation for Large Scale Applications**
Source of Support: **University of Maryland**
Total Award Amount: $477,312.
Period Covered: 10/01/93 - 05/27/00
Location of Project: Syracuse University
Person-Months Per Year Committed to the Project. Cal: **0.25**

Support: **Current**
Project/Proposal Title: **Programming Models from Fortran to JAVA**
Source of Support: **National Science Foundation**
Total Award Amount: $346,827.
Period Covered: 09/01/98 - 08/31/01
Location of Project: Syracuse University and Florida State University
Person-Months Per Year Committed to the Project. Cal: **0.25**

Support: **Current**
Project/Proposal Title: **CEWES Computing Modernization**
Source of Support: **Nichols Research Corporation**
Total Award Amount: $1,735,073.
Period Covered: 04/01/96 - 03/17/01
Location of Project: Syracuse University
Person-Months Per Year Committed to the Project. Cal: **0.50**

Support: **Current**
Project/Proposal Title: **DOD/HPC Modernization**
Source of Support: **Nichols Research Corporation**
Total Award Amount: $566,734.
Period Covered: 07/08/96 - 05/12/01
Location of Project: Syracuse University
Person-Months Per Year Committed to the Project. Cal: **0.50**

Support: **Current**
Project/Proposal Title: **E-Systems**
Source of Support: **Raytheon E-Systems**
Total Award Amount: $736,253.
Period Covered: 08/20/98 - 08/19/01
Location of Project: Syracuse University
Person-Months Per Year Committed to the Project. Cal: **0.25**

Support: **Pending**
Project/Proposal Title: **General Earthquake Model Computational Challenge**
Source of Support: **NASA JPL**
Total Award Amount: $20,000.
Period Covered: 05/01/00 - 12/31/00
Location of Project: Florida State University
Person-Months Per Year Committed to the Project. Cal: **0.50**

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: **Geoffrey Fox**

Other agencies (including NSF) to which this proposal has been/will be submitted.

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: **ITR/ACS: A Consortium for Advanced Computing in Earth Surface Dynamics**

Source of Support: **NSF**

Total Award Amount: $ **7,870,371** Total Award Period Covered: **09/01/00 - 08/31/05**

Location of Project: **FSU**

Person-Months Per Year Committed to the Project. Cal: **0.00** Acad: **0.00** Sumr: **0.00**

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: **ITR/EWF+IM: Computer Science Curriculum and the Next Generation of Education Technologies**

Source of Support: **NSF**

Total Award Amount: $ **4,404,061** Total Award Period Covered: **09/01/00 - 08/31/05**

Location of Project: **FSU**

Person-Months Per Year Committed to the Project. Cal: **0.00** Acad: **0.00** Sumr: **0.75**

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Source of Support:

Total Award Amount: $ Total Award Period Covered:

Location of Project:

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Source of Support:

Total Award Amount: $ Total Award Period Covered:

Location of Project:

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Source of Support:

Total Award Amount: $ Total Award Period Covered:

Location of Project:

Person-Months Per Year Committed to the Project. Cal: Acad: Summ:

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: **Robert Lacher**

Other agencies (including NSF) to which this proposal has been/will be submitted.

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: **ITR/EWF+IM: Computer Science Curriculum and the Next Generation of Education Technologies**

Source of Support: **NSF**
Total Award Amount: $ **4,404,062** Total Award Period Covered: **09/01/00 - 08/31/05**
Location of Project: **FSU**
Person-Months Per Year Committed to the Project. Cal: **0.00** Acad: **0.00** Sumr: **0.00**

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Summ:

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: **Willie Brown**	Other agencies (including NSF) to which this proposal has been/will be submitted.

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: **Connections to the Internet**

Source of Support:

Total Award Amount: $ **309,038** Total Award Period Covered: **01/01/00 - 01/01/00**

Location of Project: **JSU**

Person-Months Per Year Committed to the Project. Cal:**0.00** Acad: **0.00** Sumr: **0.00**

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: **ITR/EWF+IM: Computer Science Curriculum and the Next Generation of Education Technologies**

Source of Support: **NSF**

Total Award Amount: $ **1,000,000** Total Award Period Covered: **09/01/00 - 08/31/05**

Location of Project: **JSU**

Person-Months Per Year Committed to the Project. Cal:**1.20** Acad: **0.00** Sumr: **0.00**

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Source of Support:

Total Award Amount: $ Total Award Period Covered:

Location of Project:

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Source of Support:

Total Award Amount: $ Total Award Period Covered:

Location of Project:

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Source of Support:

Total Award Amount: $ Total Award Period Covered:

Location of Project:

Person-Months Per Year Committed to the Project. Cal: Acad: Summ:

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: **Shiri Byron**

Other agencies (including NSF) to which this proposal has been/will be submitted.

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: **ITR/EWF+IM:Computer Science Curriculum and the Next Generation of Education Technologies**

Source of Support: **NSF**
Total Award Amount: $ **250,000** Total Award Period Covered: **09/01/00 - 08/31/05**
Location of Project: **Morgan State University**
Person-Months Per Year Committed to the Project. Cal: **3.00** Acad: **0.00** Sumr: **0.00**

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Summ:

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Other agencies (including NSF) to which this proposal has been/will be submitted.

Investigator: **Lawrence Dennis**

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: **Support for Experimental Nuclear Physics at Florida State University**

Source of Support: **Department of Energy**

Total Award Amount: $ **1,214,000** Total Award Period Covered: **09/30/92 - 09/29/00**

Location of Project: **FSU**

Person-Months Per Year Committed to the Project. Cal: **0.00** Acad: **0.20** Sumr: **0.00**

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: **Studies of Nuclear Reactions and Structure**

Source of Support: **National Science Foundation**

Total Award Amount: $ **3,844,500** Total Award Period Covered: **06/01/00 - 03/31/02**

Location of Project: **FSU**

Person-Months Per Year Committed to the Project. Cal: **0.00** Acad: **2.50** Sumr: **1.00**

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: **Florida Center for Teacher Development in Science, Mathematics and Technology**

Source of Support: **National Science Foundation**

Total Award Amount: $ **12,869,548** Total Award Period Covered: **06/01/00 - 05/31/05**

Location of Project: **FSU**

Person-Months Per Year Committed to the Project. Cal: **0.00** Acad: **1.80** Sumr: **1.00**

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: **Support of Supercomputer Computations Research Institute**

Source of Support: **Department of Energy**

Total Award Amount: $ **1,169,000** Total Award Period Covered: **01/15/99 - 01/14/01**

Location of Project: **FSU**

Person-Months Per Year Committed to the Project. Cal: **0.00** Acad: **4.00** Sumr: **0.00**

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: ITR/EWF+IM: Computer Science Curriculum and the Next Generation of Education Technologies

Source of Support: NSF

Total Award Amount: $ 4,404,061.50 Total Award Period Covered: 09/01/00 - 8/31/05

Location of Project: FSU

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr: .75

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*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: **Ian Douglas**

Other agencies (including NSF) to which this proposal has been/will be submitted.

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: **ITR/EWF+IM: Computer Science Curriculum and the Next Generation of Education Technologies**

Source of Support: **NSF**
Total Award Amount: $ **4,404,062** Total Award Period Covered: **09/01/00 - 08/31/05**
Location of Project: **FSU**
Person-Months Per Year Committed to the Project. Cal: **0.00** Acad: **0.00** Sumr: **1.00**

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Summ:

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: **Peter Dragovitsch**

Other agencies (including NSF) to which this proposal has been/will be submitted.

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: **ITR/EWF+IM: Computer Science Curriculum and the Next Generation of Education Technologies**

Source of Support: **NSF**
Total Award Amount: $ **4,404,062** Total Award Period Covered: **09/01/00 - 08/31/05**
Location of Project: **FSU**
Person-Months Per Year Committed to the Project. Cal: **7.50** Acad: **0.00** Sumr: **0.00**

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Summ:

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: **Roscoe Giles**	Other agencies (including NSF) to which this proposal has been/will be submitted.

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: **ITR/EWF+IM: Computer Science Curriculum and the Next Generation of Education Technologies**

Source of Support: **NSF**
Total Award Amount: $ **640,803** Total Award Period Covered: **09/01/00 - 08/31/05**
Location of Project: **Boston University**
Person-Months Per Year Committed to the Project. Cal:**0.00** Acad: **0.90** Sumr: **0.90**

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: **ITR/EWF+IM: Computer Science Curriculum and the Next Generation of Education Technologies**

Source of Support: **NSF**
Total Award Amount: $ **360,448** Total Award Period Covered: **09/01/00 - 08/31/05**
Location of Project: **Boston University**
Person-Months Per Year Committed to the Project. Cal:**0.00** Acad: **0.00** Sumr: **0.00**

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: **Partneships for Advanced Computational Infrastructure (PACI): Regional Partners**

Source of Support: **NSF**
Total Award Amount: $ **1,115,018** Total Award Period Covered: **10/01/97 - 09/30/00**
Location of Project: **Boston University**
Person-Months Per Year Committed to the Project. Cal:**0.00** Acad: **0.00** Sumr: **1.00**

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: **Partnerships for Advanced Computational Infrastructure (PACI): Education, Outreach and Training (EOT)**

Source of Support: **NSF**
Total Award Amount: $ **339,979** Total Award Period Covered: **10/01/97 - 09/30/00**
Location of Project: **Boston University**
Person-Months Per Year Committed to the Project. Cal:**0.00** Acad: **0.00** Sumr: **0.00**

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Summ:

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: **Carole Hayes**

Other agencies (including NSF) to which this proposal has been/will be submitted.

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: **ITR/EWF+IM:Computer Science Curriculum and the Next Generation of Education Technologies**

Source of Support: **NSF**
Total Award Amount: $ **4,404,062** Total Award Period Covered: **09/01/00 - 08/31/05**
Location of Project: **FSU**
Person-Months Per Year Committed to the Project. Cal: **0.00** Acad: **0.00** Sumr: **1.00**

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Summ:

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: **Raquell Holmes**

Other agencies (including NSF) to which this proposal has been/will be submitted.

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: **ITR/EWF+IM: Computer Science Curriculum and the Next Generation of Education Technologies**

Source of Support: **NSF**
Total Award Amount: $ **360,448** Total Award Period Covered: **09/01/00 - 08/31/05**
Location of Project: **Boston University**
Person-Months Per Year Committed to the Project. Cal: **1.80** Acad: **0.00** Sumr: **0.00**

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: **ITR/EWF: New Approaches to Human Capital Development Through Information Technology Research (Subcontract)**

Source of Support: **NSF**
Total Award Amount: $ **640,803** Total Award Period Covered: **09/01/00 - 08/31/05**
Location of Project: **Boston University**
Person-Months Per Year Committed to the Project. Cal: **1.80** Acad: **0.00** Sumr: **0.00**

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Summ:

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: **William Lupton**	Other agencies (including NSF) to which this proposal has been/will be submitted.

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: **Computer Science Engineering and Mathematics (CSEM) Scholarship Program**

Source of Support: **NSF**

Total Award Amount: $ **250,000** Total Award Period Covered: **08/01/00 - 08/02/02**

Location of Project: **Morgan St. University**

Person-Months Per Year Committed to the Project. Cal:**0.00** Acad: **1.00** Sumr: **2.00**

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: **ITR/EWF+IM: Computer Science Curriculum and the Next Generation of Education Technologies**

Source of Support: **NSF**

Total Award Amount: $ **250,000** Total Award Period Covered: **09/01/00 - 08/31/05**

Location of Project: **Morgan State Univ.**

Person-Months Per Year Committed to the Project. Cal:**0.00** Acad: **0.00** Sumr: **0.00**

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Source of Support:

Total Award Amount: $ Total Award Period Covered:

Location of Project:

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Source of Support:

Total Award Amount: $ Total Award Period Covered:

Location of Project:

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Source of Support:

Total Award Amount: $ Total Award Period Covered:

Location of Project:

Person-Months Per Year Committed to the Project. Cal: Acad: Summ:

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: Donna S. Reese

Other agencies (including NSF) to which this proposal has been/will be submit-

Support: X Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

A Gigabit/s, VIA-Enabled Cluster Architecture for Research in High performance System Software, Scalable Knowledge Discovery, Visualization, and Planning

Source of Support: National Science Foundation

Total Award Amount: $133,293 Total Award Period Covered: Jan 15, 1999 – Dec 31, 2001

Location of Project: Mississippi State University

Person-Months Per Year Committed to the Project. 0 Cal: 0 Acad: 0 Sumr: 0

Support: X Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Instructional Technology in the CS Introductory Programming Classes

Source of Support: Hearin Foundation / Mississippi State University

Total Award Amount: $112,447 Total Award Period Covered: May 16, 1998 – Dec 31, 2000

Location of Project: Mississippi State University

Person-Months Per Year Committed to the Project. Cal: Acad: 2.25 Sumr: 0.3

Support: X Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Animation Applet for Teaching Introductory Programming Concepts

Source of Support: University of Florida / SUCCEED Coalition

Total Award Amount: $$1,972 Total Award Period Covered: Jan 1, 2000 – Aug 31, 2000

Location of Project: Mississippi State University

Person-Months Per Year Committed to the Project. 0 Cal: 0 Acad: 0 Sumr: 0

Support: ☐ Current X Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Instructional Technology As A Transition and Retention Tool for Computer Science

Source of Support: Department of Education

Total Award Amount: $303,178 Total Award Period Covered: Oct 1, 2000 – Sep 30, 2003

Location of Project: Mississippi State University

Person-Months Per Year Committed to the Project. Cal: Acad: 2.25 Sumr: 1.0

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Source of Support:

Total Award Amount: $ Total Award Period Covered:

Location of Project:

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

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*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: **Donna Reese**

Other agencies (including NSF) to which this proposal has been/will be submitted.

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: **ITR/EWF+IM: Computer Science Curriculum and the Next Generation of Education Technologies**

Source of Support: **NSF**
Total Award Amount: $ **250,000** Total Award Period Covered: **09/01/00 - 08/31/05**
Location of Project: **Mississippit State Univ.**
Person-Months Per Year Committed to the Project. Cal: **0.00** Acad: **0.00** Sumr: **2.00**

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Summ:

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

Title: Software Engineering Research Education Laboratory (SERL)
NSF - PI: Dr. Sara Stoecklin Renewed Support: (yes from previous funding)
Award Number : EIA-0 99 – 30
Current
Location of Project: Florida A & M University
Cal: 30 Acad: 20 Summer 10
Publications: new grant (approximately 5 thus far) Brief Description
This Florida A&M University (FAMU) MII proposal was prepared for the purpose of securing funding to enhance a major computing facility located within the Department of Computer and Information Science (CIS). While the grant has only been in existence for one half of an academic year, the results are impressive. The publications, presentations, research projects, research activites, and previous funding successes are fully documented on the web at the address http://www.cis.famu.edu/~mi .

Title: Center for Distributed Computing : Theory, Application and Practice
NSF-PI: Dr. Marion Harmon, NSF-Co-PI Dr. Sara Stoecklin
Award Number : HRD – 99 30 Renewed (yes, 2 years)
Publications: Total 7 PI and Co-PI – 5 Brief Description
Location of Project: Florida A & M University
Cal: 30 Acad: 20 Summer 10
The mission of the Center for Research Excellence in Science and Technology (CREST) Theory, Practice and Application is to develop the infrastructure and interdisciplinary cooperation that will increase the number of minority students enrolling in and successfully completing masters and PhD degrees in the computers science. The pertinent research components are Distributed Real-Time Systems, D Harmon and Formal Architectural Specifications, D Stoecklin. Documented at http://isfamuedu/~crest .

Title: Information Technology Research: Rigorous Refinement Based Object-Oriented Software Design
Location of Project: Colorado State University and Florida A & M University
Cal 10 Acad: 00 Summer 10
NSF-Co-PI Dr. Sara Stoecklin
Award Number : Pending
Publications:

Title: Information Technology Research: An Interdisciplinary Approach to Supporting the Design and Evolution of Complex Software Systems
Location of Project: Colorado State University and Florida A & M University
Cal 10 Acad: 00 Summer 10
NSF-Co-PI Dr. Sara Stoecklin
Award Number : Pending

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: **Joe Thompson**	Other agencies (including NSF) to which this proposal has been/will be submitted.

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: **vBNS Connection for Mississippi State University**

Source of Support: **NSF**
Total Award Amount: $ **610,834** Total Award Period Covered: **09/15/98 - 10/31/00**
Location of Project: **Mississippi State University**
Person-Months Per Year Committed to the Project. Cal:**0.00** Acad: **0.00** Sumr: **0.00**

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: **The High Performance Networked Regional Partnership**

Source of Support: **NAVO**
Total Award Amount: $ **853,000** Total Award Period Covered: **09/29/99 - 09/28/01**
Location of Project: **Mississippi State University**
Person-Months Per Year Committed to the Project. Cal:**0.00** Acad: **0.00** Sumr: **0.00**

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: **Major Shared Resource Center--CEWES**

Source of Support: **Nichols Research**
Total Award Amount: $ **539,337** Total Award Period Covered: **01/20/00 - 03/27/01**
Location of Project: **MSU NSF Engineering Research Center and CEWES**
Person-Months Per Year Committed to the Project. Cal:**6.00** Acad: **0.00** Sumr: **0.00**

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: **Major Shared Resource Center--ASC**

Source of Support: **Nichols Research**
Total Award Amount: $ **300,000** Total Award Period Covered: **05/13/99 - 05/12/01**
Location of Project: **MSU NSF Engineering Research Center and ASC**
Person-Months Per Year Committed to the Project. Cal:**0.00** Acad: **0.00** Sumr: **0.00**

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: **Major Shared Resource Center--ARL**

Source of Support: **E-Systems**
Total Award Amount: $ **151,384** Total Award Period Covered: **08/20/99 - 08/09/00**
Location of Project: **MSU NSF Engineering Research Center and ARL**
Person-Months Per Year Committed to the Project. Cal:**0.00** Acad: **0.00** Summ: **0.00**

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: **Joe Thompson**

Other agencies (including NSF) to which this proposal has been/will be submitted.

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: **ITR/EWF+IM:Computer Science Curriculum and the Next Generation of Education Technologies**

Source of Support: **NSF**
Total Award Amount: $ **250,000** Total Award Period Covered: **09/01/00 - 08/31/05**
Location of Project: **Mississippi St. Univ.**
Person-Months Per Year Committed to the Project. Cal: **0.00** Acad: **0.00** Sumr: **0.00**

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project. Cal: Acad: Summ:

*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Other agencies (including NSF) to which this proposal has been/will be submitted.

Investigator: **James Turner**

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: **Florida Center for Teacher Development in Science,Mathematiacs and Technology**

Source of Support: **National Science Foundation**

Total Award Amount: $ **12,869,548** Total Award Period Covered: **06/01/00 - 05/31/05**

Location of Project: **FSU**

Person-Months Per Year Committed to the Project. Cal:**0.00** Acad: **1.08** Sumr: **1.20**

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: **Acquisition of a Multiprocessor Computer-server for the Study of Multiscale Environmental and Industrial Systems**

Source of Support: **National Science Foundation**

Total Award Amount: $ **600,000** Total Award Period Covered: **09/30/00 - 10/01/01**

Location of Project: **Arizona State University**

Person-Months Per Year Committed to the Project. Cal:**0.00** Acad: **0.00** Sumr: **0.00**

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: **National Association of Mathematicians High Performance Computing Initiative**

Source of Support: **U.S. Department of Energy**

Total Award Amount: $ **1,200,000** Total Award Period Covered: **09/15/97 - 09/14/00**

Location of Project: **Arizona State University**

Person-Months Per Year Committed to the Project. Cal:**0.00** Acad: **2.50** Sumr: **0.00**

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: **Integrated Intelligent Modeling, Design, and Control of Crystal Growth Processes**

Source of Support: **Air Force Office of Scientific Research**

Total Award Amount: $ **323,135** Total Award Period Covered: **06/15/96 - 06/14/00**

Location of Project: **Arizona State University**

Person-Months Per Year Committed to the Project. Cal:**0.00** Acad: **0.00** Sumr: **1.50**

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: ITR/EWF+IM: Computer Science Curriculum and the Next Generation of Education Technologies

Source of Support: NSF

Total Award Amount: $4404061.50 Total Award Period Covered: 09/01/00 - 8/31/05

Location of Project: FSU

Person-Months Per Year Committed to the Project. Cal:. Acad: Sumr: 1.0

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*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

FACILITIES

Florida State University's School of Computational Science and Information Technology, is the intended home of this project. The School is housed on the first and fourth floors of the Dirac Science Center in approximately 10,000 square feet. This facility will provide the core office space, meeting facilities and computer network infrastructure for faculty, students and others involved in this project.

Current Research Equipment

The School of Computational Science and Information Technology (CSIT) operates a host of equipment relevant to this project as well as additional computer equipment for computational science research. These include:

- A Linux based web server (400MHz CPU, 6Gbytes disk, 100Mbits/s connection to the internet).
- A dual processor (300Mhz) Sun ES450 file server, with 1Gbit/s access to the network.
- A host of computers used for computational science including: 5 four R10000 processor SGI Origin 200 (180Mhz) each with 1Gigabyte memory and 27Gigabytes of disk, one single 180Mhz CPU Origin 200 (x-terminal server) one SGI maximum impact with one 1Gigabyte memory, and several SGI O2 workstations each with 1Gigabyte memory.
- A 24 node Pentium Pro computing cluster with dual processors (400Mhz), 2Mbytes memory and 8Gbytes disk per CPU, and a 100Mbits/sec Ethernet. The cluster supports the activities in physics in collaboration with Jefferson Labs in Newport News, VA.
- A 64 processor, IBM SP-2 with 48 wide nodes, each with 1 gigabyte RAM, 2 gigabyte disk and 40 Mbytes of memory, 80 thin nodes each with 256Mbytes RAM and 2 gigabytes disk supporting computational chemistry and physics.
- Two alphas ES40 from Compaq with 4 CPUs and 8Gbytes RAM each for theoretical chemistry research.
- One IBM RS6000 used as a backup file server system.
- Approximately 60 desktop workstations or PC's
- Multimedia recording facilities for creating CD-ROM's and laser disks.
- A bank of 24 modems (56Kbaud) for use at home or by those on travel.
- A Visualization Laboratory including:
    - 1 Infinite Reality Onyx with 2 pipes, 4 R10000 processors, 2 Mhz processor, 8Mbyte cache, 2Gbyte RAM, 128Mbyte texture memory, and 0.6Gbyte disk farm. Eight of the 10 disks are striped pairwise for faster I/O.
    - 1 rear projection 8'x6' PowerWall, capable of stereographics display. It resides in the seminar room and is used together with two 20" monitors for visual research, classroom activities, and presentations.
    - A wide variety of Silicon Graphics computer systems and workstations to support graphics development.

Currently CSIT is evaluating responses to an RFP for a $3M high performance computer funded by the State of Florida to support their research. This important facility will be available to support some advanced computational science classes. Further Fox is establishing his research group at FSU and this includes some 20 Sun and PC servers set-up to run Oracle and allow student uses in classes for Internet and parallel computing topics. These machines (in the similar configuration at Syracuse) were routinely used by distance education students. The campus network provides access to a number of regional, national, and worldwide networks including ESnet, NSFnet, HEPnet, BITnet, FIRN and SURAnet. In addition, two T1 connections to Esnet, via the University of Texas at Austin and Oak Ridge National Labs, are currently in use. The FSU campus backbone is a 1Gigabit FDDI ring that connects the individual research groups involved in this effort. Florida State University is a member of Internet 2

FSU's Academic Computing & Network Services (ACNS) is acquiring, installing and integrating the computer systems (file, mail, web, news, security, and database servers) and software (CourseInfo Enterprise Edition and Oracle) necessary for the long-term delivery of these distance-learning courses. Currently the system includes 8 servers (2 Suns, 1 IBM's and 2 SGI's) with over 60Gbytes of disks

storage for student and faculty use. This system will eventually be used by all of FSU for delivery of web-enhanced courses. In addition they are providing phone and online support for users of this system. Through agreements with various vendors they are able to distribute standard software, such as browsers, ftp and terminal emulation programs, etc. on CD-ROM's to all FSU students. ACNS also provides off-campus connectivity to the Internet for students and faculty via approximately eight hundred 28.8 or 56 modems connected to the appropriate rotary dial-up facilities.

The FSU Office for Distributed and Distance Learning (ODDL) is housed in parts of floors 1, 3 and 4 of the University Center (Building C), occupying approximately 6,000 square feet of space for about 14 FTE employees (including a number of graduate assistants). The ODDL operates numerous servers including 1 RedHat Linux 6.0 server (print and Intranet server); 4 Windows NT servers (primary domain control, Web server, SQL 6.5 Database server, Oracle 8 Database server, and profile server/network monitor); and approximately 10 computer workstations.

For media production support, ODDL uses the following servers and workstations:

1) 2 digital video format (MiniDV, DVCAM) camcorders for acquisition of visual images
2) 2 nonlinear video editing systems based on the Apple G4 (400MHz) using Final Cut Pro editing software
3) 1 Apple G4 nonlinear video editing system using Media 100 software
4) 2 After Effects post-production special effects workstations (Apple Macintosh PowerPC G4 and SGI 320 Visual Workstation based)
5) 1 Lightwave (SGI Irix) 3D modeling and animation workstation
6) Rendering Farm (8 CPU stations) for special effects and 3D animation
7) 2 Media Cleaner Pro Power Suite Encoding stations for the preparation of digital content for the Web (HTTP and RTP/RTSP Streaming), CD-ROM, and DVD-ROM delivery
8) 1 SGI 320 Visual Workstation for Encoding MPEG1 and 2 MPEG2 video for Web (HTTP and RTP/RTSP Streaming), CD-ROM and DVD-ROM delivery
9) 1 SGI Origin 200 Media Server for Intranet digital content file serving. - http://www.sgi.com/origin/
10) 1 SGI O2 Video Server for Model and Test video serving and Webcasting. http://www.sgi.com/o2
11) 1 SGI Indy R5000 for Web Serving of the ODDL Web site
12) Video/Audio Duplication System (low volume, no high numbers of copies) - includes Multi-International Formats (SECAM, PAL, NTSC)

International Special Information

China: International Collaborative Web University ICWU

Fox and Professor Xiaoming Li, now chair of the computer science department at Peking University, established a strong collaboration during the three years Li visited NPAC at Syracuse University. This included an early successful experiment in distance education in 1996 with a course in Internetics [33] taught from Syracuse to Harbin Institute of Technology in North China. This necessarily used asynchronous technology quite different from the later JSU experiments at NPAC. This led to a proposed extension of this as the ICWU with an initial exchange of courses between Peking, Syracuse and Bristol England (UWE). ICWU (International Collaborative Web University) could be viewed as an early vision of the concept described in fig. 2. The differences in timing, course size and student preparation clearly require the modest size learning objects proposed here to allow customization for each student body. We intend to build on this now Fox has moved to FSU with an exchange program of students and more senior researchers between FSU and Peking. The collaborative education portal described here is clearly far more suitable for cross continent education than the inflexibly synchronous TangoInteractive system. We hope to expand this fruitful collaboration (which also includes work on parallel Java) using both the curriculum and technology proposed here.

We can also note significant interest in collaboration between the European Union and USA in this area with Fox and the PACI EOT invited to a recent meeting on this subject with substantial European collaboration. The EHR division of NSF sponsored this in February at SDSC in San Diego and the discussions there were compatible with ICWU and the project proposed here. Again visiting programs and exchange of technology and curriculum should benefit both this project and our European colleagues. Cross-continent distance education obviously has many difficult and important technical, cultural and institutional issues.

Africa:

This project proposes to not only increase the number of under-represented minorities receiving degrees in computer science and computational science in the United States, but also have an impact on a similarly under-represented group in Africa. In order to achieve this goal we will form linkages with universities in West and Southern Africa, building on relationships that have existed for over a decade. Over the last three years members of this project have met with Miguel Virasoro, Director of the Abdus Salam International Centre for Theoretical Physics (Trieste, Italy), Francis K. A. Allotey, Director of the National Centre for Mathematical Sciences (Accra, Ghana), and Jan Persens, Director of the International Relations at the University of the Western Cape (Cape Town,South Africa). Also, a second series of meetings has been scheduled for June 2000 at the 2000 World Automation Congress and at the University of the Western Cape during July. Each of these institutions has been an important contributor to the development of infrastructure for supporting research and education at African universities, with Ghana and South Africa playing the role of regional centers.

These meetings will serve as a continuation of a process that will culminate in the implementation of several joint programs with the primary goal of building human capacity through education and training. One such program involves the enhancement of existing curriculum at African universities. Computer and computational sciences are key enabling sciences whose development would speed the spread of other technological advances. Thus, the interactive courseware being developed here could have an immediate impact on curriculums at participating universities. This also increases our range of learners. As with our work with China, these cross continent activities will also provide important constraints for the teaching methodology and associated technology that clearly has to aim largely at asynchronous learning. Finally, it is our hope that the network and technology being developed here will serve as a model for developing the above collaborative effort.

FSU Overseas:

Florida State University has a real and growing presence outside North America. Their branch campus in Panama, which operated since the 1950s as a service primarily to US citizens serving in the US Canal Zone, has recently expanded into a large campus in the former US government facilities. The Computer Science program has been active there for about 10 years, and there are plans to significantly expand that program, for US students studying abroad, Panamanian citizens, and more generally as a gateway to South America. FSU also has facilities and active study abroad programs in Florence, Italy

(started in 1966); London, England (started in 1971); and Torremolinos, Spain (started in 1997). The new availability of computer science at a distance is expected to impact those programs significantly. Other initiatives that are in process but not complete could result in branch campuses in India, Russia, United Arab Emirates, and Viet Nam, all of which would feature Computer Science as one of their first programs, offered using the FSU branch campus system discussed in section 2.2.1. This project would interact with FSU overseas in exchange of and synergy between technology and shared course modules. In particular the special demands of overseas students will stress test the true reusability of the modules and the appropriate granularity of their preparation. This will add value to our participation in the standards forums as it will test proposals in a broader context. We will of course test again the multi-layer collaborative university approach of fig. 2 with separated functions for preparation, teaching, and mentoring.

CERTIFICATION PAGE

Certification for Principal Investigators and Co-Principal Investigators:

I certify to the best of my knowledge that:

(1) the statements herein (excluding scientific hypotheses and scientific opinions) are true and complete, and
(2) the text and graphics herein as well as any accompanying publications or other documents, unless otherwise indicated, are the original work of the signatories or individuals working under their supervision. I agree to accept responsibility for the scientific conduct of the project and to provide the required progress reports if an award is made as a result of this application.

I understand that the willful provision of false information or concealing a material fact in this proposal or any other communication submitted to NSF is a criminal offense (U.S.Code, Title 18, Section 1001).

Name (Typed)	Signature	Social Security No.*	Date
PI/PD **Geoffrey C Fox**	Geoffrey C Fox	SSNs are confidential and are not displayed *ON FASTLANE SUBMISSIONS*	
Co-PI/PD **Robert C Lacher**	R C Lacher		4/7/00
Co-PI/PD			
Co-PI/PD			
Co-PI/PD			

Certification for Authorized Organizational Representative or Individual Applicant:

By signing and submitting this proposal, the individual applicant or the authorized official of the applicant institution is: (1) certifying that statements made herein are true and complete to the best of his/her knowledge; and (2) agreeing to accept the obligation to comply with NSF award terms and conditions if an award is made as a result of this application. Further, the applicant is hereby providing certifications regarding Federal debt status, debarment and suspension, drug-free workplace, and lobbying activities (see below), as set forth in Grant Proposal Guide (GPG), NSF 00-2. Willful provision of false information in this application and its supporting documents or in reports required under an ensuring award is a criminal offense (U. S. Code, Title 18, Section 1001).

In addition, if the applicant institution employs more than fifty persons, the authorized official of the applicant institution is certifying that the institution has implemented a written and enforced conflict of interest policy that is consistent with the provisions of Grant Policy Manual Section 510; that to the best of his/her knowledge, all financial disclosures required by that conflict of interest policy have been made; and that all identified conflicts of interest will have been satisfactorily managed, reduced or eliminated prior to the institution's expenditure of any funds under the award, in accordance with the institution's conflict of interest policy. Conflict which cannot be satisfactorily managed, reduced or eliminated must be disclosed to NSF.

Debt and Debarment Certifications

(If answer "yes" to either, please provide explanation.)

Is the organization delinquent on any Federal debt?	Yes ☐	No ☒
Is the organization or its principals presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency?	Yes ☐	No ☒

Certification Regarding Lobbying

This certification is required for an award of a Federal contract, grant, or cooperative agreement exceeding $100,000 and for an award of a Federal loan or a commitment providing for the United States to insure or guarantee a loan exceeding $150,000.

Certification for Contracts, Grants, Loans and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

AUTHORIZED ORGANIZATIONAL REPRESENTATIVE	SIGNATURE	DATE
NAME/TITLE (TYPED) **Raymond E.Bye,Jr., Interim VP Rsrch**	Raymond E. Bye, Jr.	4-5-00

TELEPHONE NUMBER	ELECTRONIC MAIL ADDRESS	FAX NUMBER
850-644-5260	**nsfaward@res.fsu.edu**	**850-644-1464**

*SUBMISSION OF SOCIAL SECURITY NUMBERS IS VOLUNTARY AND WILL NOT AFFECT THE ORGANIZATION'S ELIGIBILITY FOR AN AWARD. HOWEVER, THEY ARE AN INTEGRAL PART OF THE INFORMATION SYSTEM AND ASSIST IN PROCESSING THE PROPOSAL. SSN SOLICITED UNDER NSF ACT OF 1950, AS AMENDED.

The Florida State University
Tallahassee, Florida 32306-4530
Department of Computer Science
PO Box 4530
Telephone (904) 644-4029
Fax (850) 644-0058

April 3, 2000

Prof. Geoffrey Fox
Department of Computer Science
Florida State University
Tallahassee, FL 32306

Dear Geoffrey:

This letter is to confirm the substance of our previous discussion regarding your NSF ITR proposal that involves creation of a reusable learning object repository. That is, the Department of Computer Science will cooperate in contributing to and making use of the reusable learning object repository in creating its course offerings. I have high hopes that this project will enable us to make more effective reuse of teaching materials developed for our distance learning course offerings.

Sincerely yours,

T. P. Baker

Ted Baker
Professor & Chair

Florida State
UNIVERSITY

Learning Systems Institute
C-4600 University Center
Tallahassee, Florida 32306-2540
Fax (850) 644-4952

April 10, 2000

To Whom It May Concern:

RE: Support for National Science Foundation (NSF) Information Technology Research Program Proposal

On behalf of the Institute I would commend the proposal on "Computer Science Curriculum and the next generation of educational technologies". It aims to benefit traditionally under-represented groups and has the potential to have a major impact on the use of technology in education.

There are a large number of initiatives and projects aimed at enhancing delivery of education through technology; however, this project seems unique in two ways. Firstly, it aims to provide technological support for systematic curriculum development. Secondly, it will conduct research into the technology required for the widespread sharing of the course materials that result from the curriculum development. The concept of re-useable learning objects is currently popular. The proposal presents an educational and technical vision to make the concept practical. Once this is achieved, the quality and availability of learning resources will increase and the current wasteful duplication of production effort will be reduced.

The Learning Systems Institute at Florida State University has been involved in innovative educational research and development for over thirty years. The purpose of the institute is to improve the quality of human life through the application of research, technology, and systems thinking to human learning and performance environment design.

Dr Ian Douglas, who holds a joint appointment with LSI and computer science, is directly involved in the proposal. Dr Douglas will be able to liaise with other faculty in LSI including a number of distinguished professors with many years of experience in educational research and development. The Learning Systems Institute will endeavor to support the successful completion of this project in any way it can. We strongly believe that the research involved will be very important for the future development of educational technology.

Sincerely,

Owen Gaede, Acting Director
Learning Systems Institute

Office for
Distributed and
Distance Learning

Supporting Innovation in Teaching and Learning

MEMORANDUM

TO: Dr. Geoffrey Fox

FROM: Alan Mabe
Associate Vice President and
Dean of Graduate Studies

DATE: April 13, 2000

REF: Grant Submission

I was very pleased to learn that your grant proposal to NSF had cleared the first hurdle and is now being prepared for final submission. It involves topics of great interest to our colleagues in Distributed and Distance Learning, and I imagine we can have much fruitful collaboration centered around this project. It is an excellent vehicle for your service as Chief Technologist for Distributed and Distance Learning at Florida State University.

As you know, ODDL has agreed to fund a twelve-month faculty liaison position to work with you. You will assign 75% of the time and 25% will be assigned by the Director of ODDL, though in practice I expect the projects and activities to flow smoothly between our operations with much collaboration. This position is certainly available to assist with this grant project.

Let me confirm also that 10% of ODDL's director's time (or a designee) will be an in-kind contribution to this project.

We are pleased to cooperate with your project and the Department of Computer Science in using the 2+2 computer science distance program as a test bed for the research ideas in the proposal.

You have put together an impressive team of collaborators to address several cutting edge issues in the interrelation of learning, technology for development, delivery, and interaction, and establishing a usable reservoir of high quality educational materials.

Cc: Dr. Chris Lacher

Suite C3500 University Center
Tallahassee, FL 32306-2550
(850) 644-8004
fax (850) 644-5803
http://www.fsu.edu/~distance

Florida Agricultural and Mechanical University
TALLAHASSEE, FLORIDA 32307-5100

TELEPHONE (850) 599-3022
FAX (850) 599-3221

COLLEGE OF ARTS AND SCIENCES
DEPARTMENT OF COMPUTER INFORMATION SCIENCE

March 20, 2000

Dr. Geoffrey Fox
Florida State University
Tallahassee, Florida 32306

Dear Dr. Fox:

Please consider this a letter of support for the Information Technology Research (ITR) project entitled "Computer Science Curriculum and the Next Generation of Education Technologies" done in conjunction with Florida State University, Jackson State University, and Mississippi State University. Our department strongly supports the development of distant learning modules for our faculty to integrate into their existing courses.

We at FAMU plan to commit resources to develop and contribute such modules to the next-generation repository supported by the grant. Dr. Sara Stoecklin and myself will be working closely to contribute to the repository and to encourage the use of these modules in teaching, training and articulation of students from other disciplines.

We plan to utilize these modules in our undergraduate curriculum. We have identified some beginning courses targeted to receive and generate modules. We appreciate the opportunity to support this activity and are looking forward to working as a unit to better educate tomorrow's computer scientist and software engineer.

Sincerely,

Marion G. Harmon, Ph.D.
CIS Department Chair

MGH:vgl

FAMU IS AN EQUAL OPPORTUNITY/EQUAL ACCESS UNIVERSITY

JACKSON STATE UNIVERSITY
JACKSON, MISSISSIPPI 39217-1050

SCHOOL OF SCIENCE & TECHNOLOGY
OFFICE OF THE DEAN
(601) 968-2153
FAX (601) 968-2058

March 28, 2000

Dr. Willie Brown
Co-Investigator
Jackson State University
Jackson, MS 39217

Dear Dr. Brown:

This letter is in support of your project "Computer Science Curriculum and the Next Generation of Education Technologies" which is supported by the NSF Information Technology Research (ITR) Program.

The School of Science and Technology at Jackson State University recognizes the importance of a computer science curriculum which embraces maximum utilization of the technological advances needed in preparing students for jobs in business, academia, and government. We are committed to supporting any initiative which advances new types of interactive courseware, new learning environments and new business models for an educational infrastructure. The renovations and classroom additions in the school are designed to support state of the art teaching, learning and research.

The major components of the project as presented will provide a vehicle to address major issues that we are confronted with daily in our quest to produce computer science majors. I am convinced that with the project's success we can realize our goals on retention, graduation rates, and seamless transition of our students into business, academia, and government.

Therefore, I enthusiastically pledge to support this project personally and in my role as associate dean in the school. If I can be of further assistance, please do not hesitate to contact me in person, by phone or by e-mail.

Sincerely,

William L. White

William L. White, Ph. D.
Associate Dean
School of Science and Technology

JACKSON STATE UNIVERSITY

DEPARTMENT OF COMPUTER SCIENCE
1400 J. R. LYNCH STREET • POST OFFICE BOX 18839
JACKSON, MISSISSIPPI 39217-1039
PHONE: (601) 968-2105
FAX: (601) 968-2478

April 4, 2000

Dr. Willie Brown
Assistant Vice President
Office of Information Technology
Jackson State University
Jackson, MS 39217

Re: Support of the Computer Science Curriculum and the Next Generation of Education Technologies Project

Dear Dr. Brown:

I am pleased to learn of the proposed partnership between Florida State University and Jackson State University to the National Science Foundation for support through the Information Technology Research (ITR) Program. It is my understanding that the project will support course and curriculum development and the development of the next generation of education technologies. This project will have substantial impact on our student, faculty, and curriculum development efforts.

The Department of Computer Science has been actively involved in web-based distance education activities in programs such as the Department of Defense Programming Environment and Training Project in which you and Dr. Geoffrey Fox took leading roles. These activities have provided valuable experiences for many of our students and faculty. The project has also assisted us in the development of new courses, in which we previously lacked expertise. The proposed project will certainly expand the ongoing efforts and thus provide opportunities for a larger population of deserving students and eager faculty.

Thank you for inviting the Department of Computer Science to be a part of such a deserving effort. We are excited and honored to be a member of the project team.

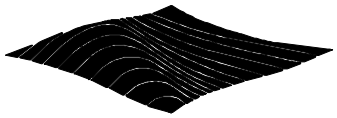
Sincerely,

Loretta A. Moore

Loretta A. Moore, Ph.D.
Associate Professor & Chair

MISSISSIPPI STATE UNIVERSITY / National Science Foundation

ENGINEERING RESEARCH CENTER FOR
COMPUTATIONAL FIELD SIMULATION
COMPLEX GEOMETRY / COMPLEX PHYSICS



April 14, 2000

Dr. Geoffrey Fox
Computational Science and Information Technology
409 Dirac Science Library
Tallahassee, FL 32306–4120

Dear Dr. Fox:

The ERC at Mississippi State is very pleased to be a part of this proposal to advance web–based education in enhancement of computer science instruction at HBCUs.

Speaking from the ERC's role in leading the multi–university team for the DoD Programming Environment & Training (PET) effort, I can attest to the solid foundation for this proposed effort in our efforts with Jackson State done in connection with the PET program.

And I certainly see efforts to advance information technology to enhance the education of a new generation of students in this same technology, particularly at HBCUs, as of National importance and in concert with the PITAC report – regardless of what universities might be successful with proposals for such effort.

Our long association with education in information technology, through our graduate program in Computational Engineering led by the ERC and in connection with the responsibilities of an NSF ERC in general, make us anxious to participate in this opportunity.

Sincerely,

for J. Donald Trotter
Director

Box 9627 / Mississippi State, MS 39762-9627 / Telephone: 662-325-8278 Fax: 662-325-7692

MORGAN
STATE UNIVERSITY
Cold Spring Lane & Hillen Rd. Baltimore, Md 21251

April 6, 2000

Dr. Willie Brown, Assistant Vice President
Office of Information and Technology
Jackson State University
PO Box 17750
Jackson, MS 39217

Dear Dr. Brown:

Subject: Distance Education Information Technology Research (ITR) Proposal

I am delighted to provide this letter of support for the proposal submitted by Jackson State University regarding the ITR Program. I am equally delighted with the opportunity presented to Morgan State University to participate in the design and research of new educational architectures and delivery technology for teaching the computer science curriculum. Jackson State has already established a relationship between our two institutions with its computer science courses delivered via the Internet. This proposal strengthens the educational technology link at Historically Black Colleges and Universities (HBCU) and will enhance the quality of computer science education.

I have enclosed the requested biographical information as the key personnel on this project. Accordingly, I serve as the Principal Investigator. Mrs. Shirl Byron of this office will represent the point of contact at Morgan and provide administrative support.

Also enclosed is a tentative budget, representing annual cost for each of the five years the project.

We are please to join Jackson State in this particular educational venture. It promises to continue a partnership established on providing the opportunity and access for state of the art learning and teaching at our universities.

Sincerely,

Dr. William Lupton, Chair
Computer Science Department

Enclosures

WL/srb

SPELMAN COLLEGE
350 SPELMAN LANE, SW
ATLANTA, GEORGIA 30314-4399
GENERAL 404-681-3643
EXTENSION 2239

EPARTMENT OF MATHEMATICS

April 10,2000

Dr. Geoffrey Fox, Principle Investigator
School of Computational Science and Information Technology
Florida State University
Tallahassee, Florida 32306-4120

Dear Dr. Fox:

This letter is to express Spelman College's interest in participating in the proposal entitled:

Computer Science and the Next Generation of Education Technology

For which you are the Principle Investigator.

Spelman College, located in Atlanta Georgia has a strong program of study in mathematics which is often complimented by activities in our computer science department. In addition, the College is completing construction on a state-of-the-art science complex, which could be used to house Spelman's participation in this project. Also as President of the National Association of Mathematicians, Inc. (NAM), I have excellent rapport and direct communication with approximately thirty (30) HBCU's/MI's. In particular, under my presidency NAM has established a computational science initiative.

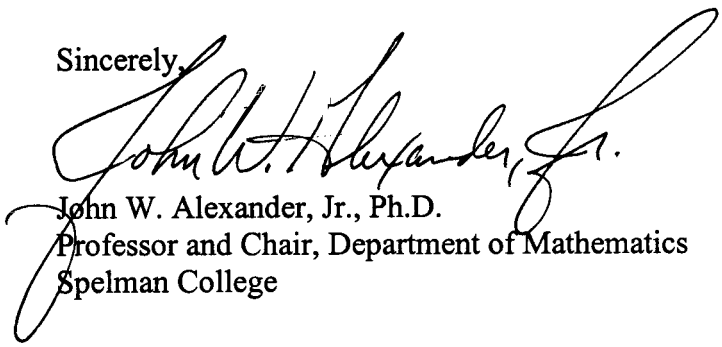
Spelman welcomes the opportunity to interact electronically, via the internet, in a collaborative fashion with its HBCU partner institutions, and Florida State University. Computational science is an area of research and courseware development that I have identified as a growth area for our department. I might also add that the Provost at our institution has enthusiastically supported growth in this area.

The program of study in the mathematical sciences at Spelman produces approximately thirty (30) bachelor degrees each year, many of these students continue their studies at the graduate level. It is anticipated that our participation in this project will assist in our efforts to encourage students to embrace the emerging computational science area.

Spelman is willing to participate in individual or joint activities with other institutions.

Should you need additional information or further details immediately, please feel free to contact me.

Sincerely,



John W. Alexander, Jr., Ph.D.
Professor and Chair, Department of Mathematics
Spelman College

ECSU's Center for Computational Science - Scientific Visualization
Elizabeth City State University; Elizabeth City, North Carolina 27909
Mathematics and Computer Science Department - Johnny L. Houston, Ph. D.; Center Director - Campus Box 959
Voice: (252) 335-3361; Fax: (252) 335-3651; E-mail: houston@ias.ga.unc.edu

April 5, 2000

Dr. Geoffrey Fox, Principal Investigator
School of Computational Science and Information Technology
400 Dirac Science Library
Florida State University
Tallahassee, FL 32306-4120

Dear Dr. Fox:

This letter comes to express Elizabeth City State University's interest in participating in the proposal entitled:

Computer Science Curriculum and the Next Generation of Education Technologies

for which you are the Principal Investigator.

Elizabeth City State University (ECSU), located in Northeastern North Carolina (50 miles south of Norfolk, VA), has a very viable program of study in computer science and in computational science. ECSU is one of the 100 plus HBCU's in the USA. Moreover, the University has state-of-the-arts Distance Learning facilities: including a twenty-four seat video-conference classroom and a ten seat video-conference conference room. Also, as Executive Secretary for the National Association of Mathematicians, Inc. (NAM), I have excellent rapport and direct communication with approximately thirty (30) HBCU's/MI's with programs of study in computer science, computational science and mathematics.

Additionally, Elizabeth City State University has a Computational Science - Scientific Visualization Center [ECSU's CSSV Center] that has specialized hardware (including Silicon Graphics 0_2 Workstations with cameras) and a variety of computational and visualization software application packages that are available for use in the teaching of advanced undergraduate courses/master level graduate courses and for dong state-of-the-arts research.

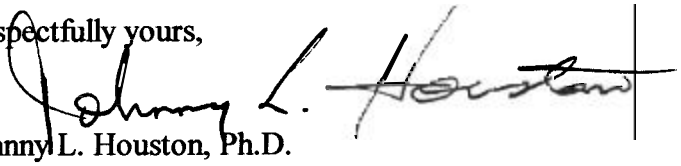
The program of study in computer science at ECSU produces approximately twenty (20) B.S. graduates each year and ECSU's CSSV Center trains and assists in the development of research projects for approximately thirty (30) students and faculty at some ten (10) HBCU's each year.

Specifically, ECSU's CSSV Center has offered a two (2) weeks Summer Institute in Computational Science for students from HBCU's/MI's who are preparing to participate in summer research programs during a given year. Enclosed is an announcement of the program for the year 2000.

ECSU is willing to participate in individual or joint activities with other institutions or take some leadership to coordinate Distance Learning Activities among several institutions.

Should you need additional information or further details immediately, please feel free to contact me.

Respectfully yours,



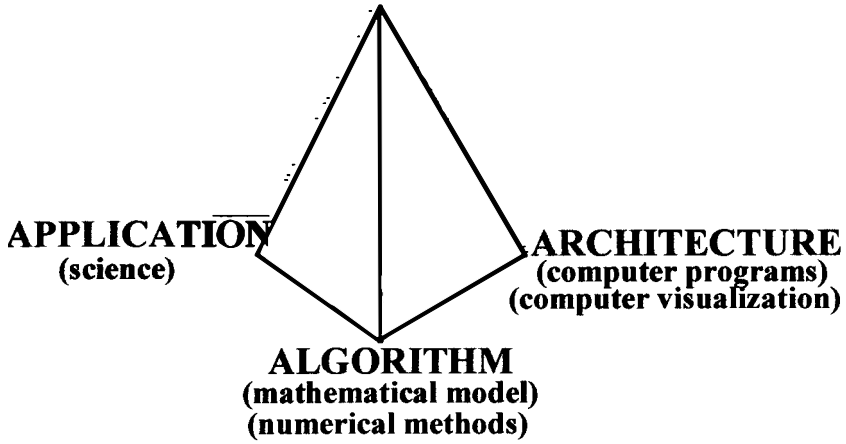
Johnny L. Houston, Ph.D.
Senior Research Professor, Dept. of Mathematics and Computer Science
Director, ECSU's CSSV Center

Enclosure

NAM - ECSU 2000 SUMMER STUDENT RESEARCH INSTITUTE IN COMPUTATIONAL SCIENCE-SCIENTIFIC VISUALIZATION
May 15 - May 27, 2000

"To Explore and Engage in Research Activities that are of interest to DoE/ To Enhance Increased Involvement and Productivity in future DoE Related Research"

Computational Science



Sponsored by the National Association of Mathematicians, Inc. (NAM)
and
Elizabeth City State University (ECSU), with funding support from the Dept. of Energy (DoE).

PARTICIPATION LIMITED: 20 students, 5 faculty; application-selection-acceptance required.

Conference participation includes room and meals and a $500 stipend for students.
(A maximum of $250 is provided for travel to and from the Institute.)

A. **Length of Time:** Two (2) weeks
B. **Institute Dates:** May 15 - May 27, 2000
C. **Generic Institute Structure:** Tutorials -Lab Assignments-Presentations-Project Dev.
D. **Participants:** Twenty (20) Student Mathematical Sciences Majors,
Five (5) Mathematical Sciences Faculty Mentors - Team Leaders,
{25 Persons: Five (5) Research Teams; 4 students - 1 faculty, per team}

For application/information, contact Johnny L. Houston at (252) 335-3326, Fax# (252) 335-3651
(e-mail: houston@ias.ga.unc.edu or nam@ias.ga.unc.edu).

CERTIFICATION PAGE

Certification for Principal Investigators and Co-Principal Investigators:

I certify to the best of my knowledge that:

(1) the statements herein (excluding scientific hypotheses and scientific opinions) are true and complete, and
(2) the text and graphics herein as well as any accompanying publications or other documents, unless otherwise indicated, are the original work of the signatories or individuals working under their supervision. I agree to accept responsibility for the scientific conduct of the project and to provide the required progress reports if an award is made as a result of this application.

I understand that the willful provision of false information or concealing a material fact in this proposal or any other communication submitted to NSF is a criminal offense (U.S.Code, Title 18, Section 1001).

Name (Typed)	Signature	Social Security No.*	Date
PI/PD Roscoe C Giles	Roscoe Giles	SSNs are confidential and are not displayed *ON FASTLANE SUBMISSIONS*	
Co-PI/PD			
Co-PI/PD			
Co-PI/PD			
Co-PI/PD			

Certification for Authorized Organizational Representative or Individual Applicant:

By signing and submitting this proposal, the individual applicant or the authorized official of the applicant institution is: (1) certifying that statements made herein are true and complete to the best of his/her knowledge; and (2) agreeing to accept the obligation to comply with NSF award terms and conditions if an award is made as a result of this application. Further, the applicant is hereby providing certifications regarding Federal debt status, debarment and suspension, drug-free workplace, and lobbying activities (see below), as set forth in Grant Proposal Guide (GPG), NSF 00-2. Willful provision of false information in this application and its supporting documents or in reports required under an ensuring award is a criminal offense (U. S. Code, Title 18, Section 1001).

In addition, if the applicant institution employs more than fifty persons, the authorized official of the applicant institution is certifying that the institution has implemented a written and enforced conflict of interest policy that is consistent with the provisions of Grant Policy Manual Section 510; that to the best of his/her knowledge, all financial disclosures required by that conflict of interest policy have been made; and that all identified conflicts of interest will have been satisfactorily managed, reduced or eliminated prior to the institution's expenditure of any funds under the award, in accordance with the institution's conflict of interest policy. Conflict which cannot be satisfactorily managed, reduced or eliminated must be disclosed to NSF.

Debt and Debarment Certifications

(If answer "yes" to either, please provide explanation.)

Is the organization delinquent on any Federal debt? Yes ☐ No ☒

Is the organization or its principals presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency? Yes ☐ No ☒

Certification Regarding Lobbying

This certification is required for an award of a Federal contract, grant, or cooperative agreement exceeding $100,000 and for an award of a Federal loan or a commitment providing for the United States to insure or guarantee a loan exceeding $150,000.

Certification for Contracts, Grants, Loans and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

AUTHORIZED ORGANIZATIONAL REPRESENTATIVE	SIGNATURE	DATE
NAME/TITLE (TYPED) Steven Singer	Steven Singer	4/14/2000

TELEPHONE NUMBER	ELECTRONIC MAIL ADDRESS	FAX NUMBER
617-353-4365		617-353-6660

*SUBMISSION OF SOCIAL SECURITY NUMBERS IS VOLUNTARY AND WILL NOT AFFECT THE ORGANIZATION'S ELIGIBILITY FOR AN AWARD. HOWEVER, THEY ARE AN INTEGRAL PART OF THE INFORMATION SYSTEM AND ASSIST IN PROCESSING THE PROPOSAL. SSN SOLICITED UNDER NSF ACT OF 1950, AS AMENDED.

SUMMARY PROPOSAL BUDGET

YEAR 1

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Boston University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Roscoe Giles**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Roscoe Giles - P.I.**	0.00	0.00	0.00	$ 0	$
2. **Raquell M Holmes - Sr. Pers.**	1.80	0.00	0.00	8,837	
3.					
4.					
5.					
6. (0) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	0.00	0.00	0.00	0	
7. (2) TOTAL SENIOR PERSONNEL (1 - 6)	1.80	0.00	0.00	8,837	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (0) POST DOCTORAL ASSOCIATES	0.00	0.00	0.00	0	
2. (0) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	0.00	0.00	0.00	0	
3. (1) GRADUATE STUDENTS				19,500	
4. (1) UNDERGRADUATE STUDENTS				5,000	
5. (0) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				0	
6. (0) OTHER				0	
TOTAL SALARIES AND WAGES (A + B)				33,337	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				1,829	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				35,166	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				0	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				4,000	
2. FOREIGN				0	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ 0					
2. TRAVEL 0					
3. SUBSISTENCE 0					
4. OTHER 0					
(0) TOTAL PARTICIPANT COSTS				0	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				0	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				0	
3. CONSULTANT SERVICES				0	
4. COMPUTER SERVICES				0	
5. SUBAWARDS				0	
6. OTHER				0	
TOTAL OTHER DIRECT COSTS				0	
H. TOTAL DIRECT COSTS (A THROUGH G)				39,166	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **% of MTDC (Rate: 63.0000, Base: 39166)**					
TOTAL INDIRECT COSTS (F&A)				24,674	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				63,840	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				0	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ 63,840	$

M. COST SHARING PROPOSED LEVEL $ 0 | AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*: **Roscoe Giles** Roscoe Giles — DATE: 4-14-00

ORG. REP. TYPED NAME & SIGNATURE*: Steven Singer Steven Singer — DATE: 4/14/00

FOR NSF USE ONLY		
INDIRECT COST RATE VERIFICATION		
Date Checked	Date Of Rate Sheet	Initials - ORG

NSF Form 1030 (10/96) Supersedes all previous editions

1 *SIGNATURES REQUIRED ONLY FOR REVISED BUDGET (GPG III.B)

SUMMARY PROPOSAL BUDGET

YEAR 2

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION
Boston University

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR
Roscoe Giles

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. Roscoe Giles - P.I.	0.00	0.00	0.00	$ 0	$
2. Raquell M Holmes - Sr. Pers.	1.80	0.00	0.00	9,190	
3.					
4.					
5.					
6. (0) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	0.00	0.00	0.00	0	
7. (2) TOTAL SENIOR PERSONNEL (1 - 6)	1.80	0.00	0.00	9,190	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (0) POST DOCTORAL ASSOCIATES	0.00	0.00	0.00	0	
2. (0) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	0.00	0.00	0.00	0	
3. (1) GRADUATE STUDENTS				20,280	
4. (1) UNDERGRADUATE STUDENTS				5,200	
5. (0) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				0	
6. (0) OTHER				0	
TOTAL SALARIES AND WAGES (A + B)				34,670	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				1,902	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				36,572	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				0	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				4,160	
2. FOREIGN				0	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ 0					
2. TRAVEL 0					
3. SUBSISTENCE 0					
4. OTHER 0					
(0) TOTAL PARTICIPANT COSTS				0	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				0	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				0	
3. CONSULTANT SERVICES				0	
4. COMPUTER SERVICES				0	
5. SUBAWARDS				0	
6. OTHER				3,000	
TOTAL OTHER DIRECT COSTS				3,000	
H. TOTAL DIRECT COSTS (A THROUGH G)				43,732	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **% of MTDC (Rate: 63.0000, Base: 43732)**					
TOTAL INDIRECT COSTS (F&A)				27,551	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				71,283	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				0	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ 71,283	$

M. COST SHARING PROPOSED LEVEL $ 0 | AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE* Roscoe Giles
Roscoe Giles
DATE 4-14-00

ORG. REP. TYPED NAME & SIGNATURE* Steven Singer
Steven Singer
DATE 4/14/2000

FOR NSF USE ONLY		
INDIRECT COST RATE VERIFICATION		
Date Checked	Date Of Rate Sheet	Initials - ORG

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2 *SIGNATURES REQUIRED ONLY FOR REVISED BUDGET (GPG III.B)

SUMMARY PROPOSAL BUDGET

YEAR 3

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Boston University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Roscoe Giles**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Roscoe Giles - P.I.**	0.00	0.00	0.00	$ 0	$
2. **Raquell M Holmes - Sr. Pers.**	1.80	0.00	0.00	9,558	
3.					
4.					
5.					
6. (0) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	0.00	0.00	0.00	0	
7. (2) TOTAL SENIOR PERSONNEL (1 - 6)	1.80	0.00	0.00	9,558	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (0) POST DOCTORAL ASSOCIATES	0.00	0.00	0.00	0	
2. (0) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	0.00	0.00	0.00	0	
3. (1) GRADUATE STUDENTS				21,091	
4. (1) UNDERGRADUATE STUDENTS				5,408	
5. (0) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				0	
6. (0) OTHER				0	
TOTAL SALARIES AND WAGES (A + B)				36,057	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				1,979	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				38,036	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				0	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				4,326	
2. FOREIGN				0	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ 0					
2. TRAVEL 0					
3. SUBSISTENCE 0					
4. OTHER 0					
(0) TOTAL PARTICIPANT COSTS				0	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				0	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				0	
3. CONSULTANT SERVICES				0	
4. COMPUTER SERVICES				0	
5. SUBAWARDS				0	
6. OTHER				0	
TOTAL OTHER DIRECT COSTS				0	
H. TOTAL DIRECT COSTS (A THROUGH G)				42,362	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **% of MTDC (Rate: 63.0000, Base: 42362)**					
TOTAL INDIRECT COSTS (F&A)				26,688	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				69,050	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				0	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ 69,050	$

M. COST SHARING PROPOSED LEVEL $ 0 | AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*: **Roscoe Giles** Roscoe Giles — DATE 4-14-00

ORG. REP. TYPED NAME & SIGNATURE*: Steven Singer Steven Singer — DATE 4/14/2000

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INDIRECT COST RATE VERIFICATION		
Date Checked	Date Of Rate Sheet	Initials - ORG

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3 *SIGNATURES REQUIRED ONLY FOR REVISED BUDGET (GPG III.B)

SUMMARY PROPOSAL BUDGET — YEAR 4

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Boston University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Roscoe Giles**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. Roscoe Giles - P.I.	0.00	0.00	0.00	$ 0	$
2. Raquell M Holmes - Sr. Pers.	1.80	0.00	0.00	9,940	
3.					
4.					
5.					
6. (0) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	0.00	0.00	0.00	0	
7. (2) TOTAL SENIOR PERSONNEL (1 - 6)	1.80	0.00	0.00	9,940	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (0) POST DOCTORAL ASSOCIATES	0.00	0.00	0.00	0	
2. (0) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	0.00	0.00	0.00	0	
3. (1) GRADUATE STUDENTS				21,935	
4. (1) UNDERGRADUATE STUDENTS				5,624	
5. (0) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				0	
6. (0) OTHER				0	
TOTAL SALARIES AND WAGES (A + B)				37,499	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				2,058	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				39,557	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				0	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				4,499	
2. FOREIGN				0	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ 0					
2. TRAVEL 0					
3. SUBSISTENCE 0					
4. OTHER 0					
(0) TOTAL PARTICIPANT COSTS				0	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				0	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				0	
3. CONSULTANT SERVICES				0	
4. COMPUTER SERVICES				0	
5. SUBAWARDS				0	
6. OTHER				3,000	
TOTAL OTHER DIRECT COSTS				3,000	
H. TOTAL DIRECT COSTS (A THROUGH G)				47,056	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **% of MTDC (Rate: 63.0000, Base: 47056)**					
TOTAL INDIRECT COSTS (F&A)				29,645	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				76,701	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				0	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ 76,701	$

M. COST SHARING PROPOSED LEVEL $ 0 — AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*: **Roscoe Giles** Roscoe Giles — DATE: 4-14-00

ORG. REP. TYPED NAME & SIGNATURE*: Steven Singer Steven Singer — DATE: 4/14/2000

FOR NSF USE ONLY — INDIRECT COST RATE VERIFICATION		
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4 *SIGNATURES REQUIRED ONLY FOR REVISED BUDGET (GPG III.B)

SUMMARY PROPOSAL BUDGET

YEAR 5

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Boston University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Roscoe Giles**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Roscoe Giles - P.I.**	0.00	0.00	0.00	$ 0	$
2. **Raquell M Holmes - Sr. Pers.**	1.80	0.00	0.00	10,338	
3.					
4.					
5.					
6. (0) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	0.00	0.00	0.00	0	
7. (2) TOTAL SENIOR PERSONNEL (1 - 6)	1.80	0.00	0.00	10,338	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (0) POST DOCTORAL ASSOCIATES	0.00	0.00	0.00	0	
2. (0) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	0.00	0.00	0.00	0	
3. (1) GRADUATE STUDENTS				22,812	
4. (1) UNDERGRADUATE STUDENTS				5,849	
5. (0) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				0	
6. (0) OTHER				0	
TOTAL SALARIES AND WAGES (A + B)				38,999	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				2,140	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				41,139	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				0	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				4,679	
2. FOREIGN				0	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ 0					
2. TRAVEL 0					
3. SUBSISTENCE 0					
4. OTHER 0					
(0) TOTAL PARTICIPANT COSTS				0	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				0	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				0	
3. CONSULTANT SERVICES				0	
4. COMPUTER SERVICES				0	
5. SUBAWARDS				0	
6. OTHER				3,000	
TOTAL OTHER DIRECT COSTS				3,000	
H. TOTAL DIRECT COSTS (A THROUGH G)				48,818	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **%of MTDC (Rate: 63.0000, Base: 48818)**					
TOTAL INDIRECT COSTS (F&A)				30,755	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				79,573	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				0	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ 79,573	$

M. COST SHARING PROPOSED LEVEL $ 0 | AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*: **Roscoe Giles** Roscoe Giles — DATE: 4-14-00

ORG. REP. TYPED NAME & SIGNATURE*: Steven Singer Steven Singer — DATE: 4/14/2000

FOR NSF USE ONLY		
INDIRECT COST RATE VERIFICATION		
Date Checked	Date Of Rate Sheet	Initials - ORG

NSF Form 1030 (10/98) Supersedes all previous editions

5 *SIGNATURES REQUIRED ONLY FOR REVISED BUDGET (GPG III.B)

SUMMARY PROPOSAL BUDGET

Cumulative

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Boston University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Roscoe Giles**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Roscoe Giles - P.I.**	0.00	0.00	0.00	$ 0	$
2. **Raquell M Holmes - Sr. Pers.**	9.00	0.00	0.00	47,863	
3.					
4.					
5.					
6. ( ) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	0.00	0.00	0.00	0	
7. (2) TOTAL SENIOR PERSONNEL (1 - 6)	9.00	0.00	0.00	47,863	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (0) POST DOCTORAL ASSOCIATES	0.00	0.00	0.00	0	
2. (0) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	0.00	0.00	0.00	0	
3. (5) GRADUATE STUDENTS				105,618	
4. (5) UNDERGRADUATE STUDENTS				27,081	
5. (0) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				0	
6. (0) OTHER				0	
TOTAL SALARIES AND WAGES (A + B)				180,562	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				9,908	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				190,470	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				0	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				21,664	
2. FOREIGN				0	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ 0					
2. TRAVEL 0					
3. SUBSISTENCE 0					
4. OTHER 0					
(0) TOTAL PARTICIPANT COSTS				0	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				0	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				0	
3. CONSULTANT SERVICES				0	
4. COMPUTER SERVICES				0	
5. SUBAWARDS				0	
6. OTHER				9,000	
TOTAL OTHER DIRECT COSTS				9,000	
H. TOTAL DIRECT COSTS (A THROUGH G)				221,134	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE)					
TOTAL INDIRECT COSTS (F&A)				139,314	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				360,448	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				0	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ 360,448	$

M. COST SHARING PROPOSED LEVEL $ 0 | AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE* **Roscoe Giles** Roscoe Giles — DATE 4-14-00

ORG. REP. TYPED NAME & SIGNATURE* Steven Singer Steven Singer — DATE 4/14/2000

FOR NSF USE ONLY		
INDIRECT COST RATE VERIFICATION		
Date Checked	Date Of Rate Sheet	Initials - ORG

NSF Form 1030 (10/98) Supersedes all previous editions

*SIGNATURES REQUIRED ONLY FOR REVISED BUDGET (GPG III.B)

CERTIFICATION PAGE

Certification for Principal Investigators and Co-Principal Investigators:

I certify to the best of my knowledge that:

(1) the statements herein (excluding scientific hypotheses and scientific opinions) are true and complete, and
(2) the text and graphics herein as well as any accompanying publications or other documents, unless otherwise indicated, are the original work of the signatories or individuals working under their supervision. I agree to accept responsibility for the scientific conduct of the project and to provide the required progress reports if an award is made as a result of this application.

I understand that the willful provision of false information or concealing a material fact in this proposal or any other communication submitted to NSF is a criminal offense (U.S.Code, Title 18, Section 1001).

Name (Typed)	Signature	Social Security No.*	Date
PI/PD		SSNs are confidential and are not displayed *ON FASTLANE SUBMISSIONS*	
Co-PI/PD			
Co-PI/PD Sara Stoecklin	Dr. Sara Stoecklin		4/11/2000
Co-PI/PD			
Co-PI/PD			

Certification for Authorized Organizational Representative or Individual Applicant:

By signing and submitting this proposal, the individual applicant or the authorized official of the applicant institution is: (1) certifying that statements made herein are true and complete to the best of his/her knowledge; and (2) agreeing to accept the obligation to comply with NSF award terms and conditions if an award is made as a result of this application. Further, the applicant is hereby providing certifications regarding Federal debt status, debarment and suspension, drug-free workplace, and lobbying activities (see below), as set forth in Grant Proposal Guide (GPG), NSF 00-2. Willful provision of false information in this application and its supporting documents or in reports required under an ensuring award is a criminal offense (U. S. Code, Title 18, Section 1001).

In addition, if the applicant institution employs more than fifty persons, the authorized official of the applicant institution is certifying that the institution has implemented a written and enforced conflict of interest policy that is consistent with the provisions of Grant Policy Manual Section 510; that to the best of his/her knowledge, all financial disclosures required by that conflict of interest policy have been made; and that all identified conflicts of interest will have been satisfactorily managed, reduced or eliminated prior to the institution's expenditure of any funds under the award, in accordance with the institution's conflict of interest policy. Conflict which cannot be satisfactorily managed, reduced or eliminated must be disclosed to NSF.

Debt and Debarment Certifications

(If answer "yes" to either, please provide explanation.)

Is the organization delinquent on any Federal debt? Yes ☐ No ☒

Is the organization or its principals presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency? Yes ☐ No ☒

Certification Regarding Lobbying

This certification is required for an award of a Federal contract, grant, or cooperative agreement exceeding $100,000 and for an award of a Federal loan or a commitment providing for the United States to insure or guarantee a loan exceeding $150,000.

Certification for Contracts, Grants, Loans and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

AUTHORIZED ORGANIZATIONAL REPRESENTATIVE	SIGNATURE	DATE
NAME/TITLE (TYPED) Franklin D. Hamilton	Franklin D. Hamilton	04/11/00

TELEPHONE NUMBER	ELECTRONIC MAIL ADDRESS	FAX NUMBER
850/599-3531	sponsor@famu.edu	850/599-3952

*SUBMISSION OF SOCIAL SECURITY NUMBERS IS VOLUNTARY AND WILL NOT AFFECT THE ORGANIZATION'S ELIGIBILITY FOR AN AWARD. HOWEVER, THEY ARE AN INTEGRAL PART OF THE INFORMATION SYSTEM AND ASSIST IN PROCESSING THE PROPOSAL. SSN SOLICITED UNDER NSF ACT OF 1950, AS AMENDED.

FAMU Project Statement of Work for NSF Information Technology Research (ITR) Program
(Information Technology Education and Workforce, and Information Management areas)
Budget Justification

Title: Computer Science Curriculum and the Next Generation of Education Technologies

Principal Investigator: Geoffrey Fox (Florida State University)
Co-Investigators: **Sara Stoecklin (Florida A and M University) and others**

Year One

During the first year, the PI and senior personnel will participate in the development of learning modules with the assistance of one graduate student. Travel monies will be used for any education and training necessary for distant learning courses and collaboration with other HBCU's. We will update our network to comply with that necessary for FAMU/FSU collaboration, purchase any supporting equipment for the network including printers and install 12 PC's for expanding our teaching laboratory since more courses may need to use the teaching environment. A laboratory manager salary is included to set up any environment necessary for course development. The initial graduate student will aid in the development of the modules.

Year Two

During the second year, the PI and senior personnel will continue to develop learning modules and install these modules in an environment which parallels FSU environment for development of these modules. Travel moneys will be again used for any training and collaboration with other HBCU's, We will increase our PC's by 4 to maintain the laboratory and provide course developers with latest technology. Materials and supply money will be used to purchase software needed to set up the development environment. The initial graduate student will aid in the development of modules. The additional graduate students will be used to evaluate any of the developed modules and provide easy access for the repository modules. The laboratory manager will be necessary to maintain the environment and update it as necessary for new development.

Year Three, Four, and Five

During the third to the fifth year, the PI and senior personnel will continue to develop learning modules and distribute learning modules from the repository to FAMU students. The initial graduate students will continue to aid in module development. The additional graduate student will be used to conduct the modules in a distant learning environment. The last graduate student and undergraduate student will aid in the assessment of modules provided by other institutions. Travel moneys will now be used to present research findings of the environment, assessment and infrastructure. Materials and supply money will be used to purchase printing supplies and software necessary to keep current the development environment.

CERTIFICATION PAGE

Certification for Principal Investigators and Co-Principal Investigators

I certify to the best of my knowledge that:

(1) the statements herein (excluding scientific hypotheses and scientific opinions) are true and complete, and
(2) the text and graphics herein as well as any accompanying publications or other documents, unless otherwise indicated, are the original work of the signatories or individuals working under their supervision. I agree to accept responsibility for the scientific conduct of the project and to provide the required progress reports if an award is made as a result of this application.

I understand that the willful provision of false information or concealing a material fact in this proposal or any other communication submitted to NSF is criminal offense (U.S.Code, Title 18, Section 1001).

Name (Typed)	Signature	Date
PI/PD Willie G. Brown, Ph.D.	Willie G. Brown	4/13/00
Co-PI/PD		
Co-PI/PD		
Co-PI/PD		
Co-PI/PD		

Certification for Authorized Organizational Representative or Individual Applicant

By signing and submitting this proposal, the individual applicant or the authorized official of the applicant institution is: (1) certifying that statements herein are true and complete to the best of his/her knowledge; and (2) agreeing to accept the obligation to comply with NSF award terms and an award is made as a result of this application. Further, the applicant is hereby providing certifications regarding Federal debt status, debarment and suspension, drugfree workplace, and lobbying activities (see below), as set forth in the *Grant Proposal Guide (GPG)*, NSF 95-27. Willful provision of false information in this application and its supporting documents or in reports required under an ensuing award is a criminal offense (U.S. Code, Title Section 1001).

In addition, if the applicant institution employs more than fifty persons, the authorized official of the applicant institution is certifying that the institution implemented a written and enforced conflict of interest policy that is consistent with the provisions of *Grant Policy Manual* Section 510; that to the best his/her knowledge, all financial disclosures required by that conflict of interest policy have been made; and that all identified conflicts of interest will been satisfactorily managed, reduced or eliminated prior to the institution's expenditure of any funds under the award, in accordance with the conflict of interest policy. Conflicts which cannot be satisfactorily managed, reduced or eliminated must be disclosed to NSF.

Debt and Debarment Certifications (If answer "yes" to either, please provide explanation.)

Is the organization delinquent on any Federal debt? Yes ☐ No ☐

Is the organization or its principals presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal Department or agency? Yes ☐ No ☐

Certification Regarding Lobbying

This certification is required for an award of a Federal contract, grant or cooperative agreement exceeding $100,000 and for an award of a Federal loan a commitment providing for the United States to insure or guarantee a loan exceeding $150,000.

Certification for Contracts, Grants, Loans and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress connection with the awarding of any federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer employee of any agency, a Member of Congress, and officer or employee of Congress, or an employee of a Member of Congress in connection with Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements and that all subrecipients shall certify and disclose

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

AUTHORIZED ORGANIZATIONAL REPRESENTATIVE	SIGNATURE	DATE
NAME/TITLE (TYPED) Felix A. Okojie, Ph.D.	Felix A. Okojie	4/13/00

TELEPHONE NUMBER	ELECTRONIC MAIL ADDRESS	FAX NUMBER
(601) 968-2931	faokojie@ccaix.jsums.edu	(601) 974-6334

SUMMARY PROPOSAL BUDGET YEAR 1

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Mississippi State University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Joe Thompson**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. Joe Thompson - PI	0.00	0.00	0.00	$ 0	$
2. Donna S Reese - Sr. Pers.	0.00	0.00	2.00	17,046	
3.					
4.					
5.					
6. (0) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	0.00	0.00	0.00	0	
7. (2) TOTAL SENIOR PERSONNEL (1 - 6)	0.00	0.00	2.00	17,046	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (0) POST DOCTORAL ASSOCIATES	0.00	0.00	0.00	0	
2. (0) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	0.00	0.00	0.00	0	
3. (1) GRADUATE STUDENTS				12,000	
4. (0) UNDERGRADUATE STUDENTS				0	
5. (0) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				0	
6. (0) OTHER				0	
TOTAL SALARIES AND WAGES (A + B)				29,046	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				6,981	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				36,027	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				0	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				0	
2. FOREIGN				0	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ 0					
2. TRAVEL 0					
3. SUBSISTENCE 0					
4. OTHER 0					
(0) TOTAL PARTICIPANT COSTS				0	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				85	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				0	
3. CONSULTANT SERVICES				0	
4. COMPUTER SERVICES				0	
5. SUBAWARDS				0	
6. OTHER				86	
TOTAL OTHER DIRECT COSTS				171	
H. TOTAL DIRECT COSTS (A THROUGH G)				36,198	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **Modified Direct Costs (Rate: 41.5000, Base: 33258)**					
TOTAL INDIRECT COSTS (F&A)				13,802	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				50,000	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				0	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ 50,000	$

M. COST SHARING PROPOSED LEVEL $ 0 AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE* Joe Thompson Joe T. Thompson DATE

ORG. REP. TYPED NAME & SIGNATURE* Martha Rowe DATE 4/14/00

FOR NSF USE ONLY		
INDIRECT COST RATE VERIFICATION		
Date Checked	Date Of Rate Sheet	Initials - ORG

NSF Form 1030 (10/98) Supersedes all previous editions

1 *SIGNATURES REQUIRED ONLY FOR REVISED BUDGET (GPG III.B)

SUMMARY PROPOSAL BUDGET

YEAR 2

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Mississippi State University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Joe Thompson**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. Joe Thompson - PI	0.00	0.00	0.00	$ 0	$
2. Donna S Reese - Sr. Pers.	0.00	0.00	1.75	15,661	
3.					
4.					
5.					
6. (0) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	0.00	0.00	0.00	0	
7. (2) TOTAL SENIOR PERSONNEL (1 - 6)	0.00	0.00	1.75	15,661	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (0) POST DOCTORAL ASSOCIATES	0.00	0.00	0.00	0	
2. (0) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	0.00	0.00	0.00	0	
3. (1) GRADUATE STUDENTS				12,000	
4. (0) UNDERGRADUATE STUDENTS				0	
5. (0) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				0	
6. (0) OTHER				0	
TOTAL SALARIES AND WAGES (A + B)				27,661	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				6,809	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				34,470	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				0	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				1,000	
2. FOREIGN				0	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ 0					
2. TRAVEL 0					
3. SUBSISTENCE 0					
4. OTHER 0					
(0) TOTAL PARTICIPANT COSTS				0	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				385	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				0	
3. CONSULTANT SERVICES				0	
4. COMPUTER SERVICES				0	
5. SUBAWARDS				0	
6. OTHER				386	
TOTAL OTHER DIRECT COSTS				771	
H. TOTAL DIRECT COSTS (A THROUGH G)				36,241	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **Modified Dir (Rate: 41.5000, Base: 33155)**					
TOTAL INDIRECT COSTS (F&A)				13,759	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				50,000	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				0	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ 50,000	$

M. COST SHARING PROPOSED LEVEL $ 0 AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE* Joe Thompson — DATE

ORG. REP. TYPED NAME & SIGNATURE* — DATE 4/14/00

FOR NSF USE ONLY
INDIRECT COST RATE VERIFICATION

Date Checked	Date Of Rate Sheet	Initials - ORG

NSF Form 1030 (10/98) Supersedes all previous editions

2 *SIGNATURES REQUIRED ONLY FOR REVISED BUDGET (GPG III.B)

SUMMARY PROPOSAL BUDGET

YEAR 3

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Mississippi State University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Joe Thompson**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. Joe Thompson - PI	0.00	0.00	0.00	$ 0	$
2. Donna S Reese - Sr. Pers.	0.00	0.00	1.75	16,444	
3.					
4.					
5.					
6. (0) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	0.00	0.00	0.00	0	
7. (2) TOTAL SENIOR PERSONNEL (1 - 6)	0.00	0.00	1.75	16,444	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (0) POST DOCTORAL ASSOCIATES	0.00	0.00	0.00	0	
2. (0) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	0.00	0.00	0.00	0	
3. (1) GRADUATE STUDENTS				12,000	
4. (0) UNDERGRADUATE STUDENTS				0	
5. (0) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				0	
6. (0) OTHER				0	
TOTAL SALARIES AND WAGES (A + B)				28,444	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				7,143	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				35,587	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				0	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				500	
2. FOREIGN				0	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ 0					
2. TRAVEL 0					
3. SUBSISTENCE 0					
4. OTHER 0					
(0) TOTAL PARTICIPANT COSTS				0	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				100	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				0	
3. CONSULTANT SERVICES				0	
4. COMPUTER SERVICES				0	
5. SUBAWARDS				0	
6. OTHER				99	
TOTAL OTHER DIRECT COSTS				199	
H. TOTAL DIRECT COSTS (A THROUGH G)				36,286	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **Modified Direct Costs (Rate: 41.5000, Base: 33046)**					
TOTAL INDIRECT COSTS (F&A)				13,714	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				50,000	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				0	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ 50,000	$

M. COST SHARING PROPOSED LEVEL $ 0 | AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE* Joe Thompson — DATE

ORG. REP. TYPED NAME & SIGNATURE* — DATE 4/4/02

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INDIRECT COST RATE VERIFICATION		
Date Checked	Date Of Rate Sheet	Initials - ORG

NSF Form 1030 (10/98) Supersedes all previous editions

3 *SIGNATURES REQUIRED ONLY FOR REVISED BUDGET (GPG III.B)

SUMMARY PROPOSAL BUDGET

YEAR 4

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Mississippi State University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Joe Thompson**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. Joe Thompson - PI	0.00	0.00	0.00	$ 0	$
2. Donna S Reese - Sr. Pers.	0.00	0.00	1.50	14,800	
3.					
4.					
5.					
6. (0) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	0.00	0.00	0.00	0	
7. (2) TOTAL SENIOR PERSONNEL (1 - 6)	0.00	0.00	1.50	14,800	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (0) POST DOCTORAL ASSOCIATES	0.00	0.00	0.00	0	
2. (0) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	0.00	0.00	0.00	0	
3. (1) GRADUATE STUDENTS				12,000	
4. (0) UNDERGRADUATE STUDENTS				0	
5. (0) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				0	
6. (0) OTHER				0	
TOTAL SALARIES AND WAGES (A + B)				26,800	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				6,926	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				33,726	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				0	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				1,500	
2. FOREIGN				0	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ 0					
2. TRAVEL 0					
3. SUBSISTENCE 0					
4. OTHER 0					
(0) TOTAL PARTICIPANT COSTS				0	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				554	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				0	
3. CONSULTANT SERVICES				0	
4. COMPUTER SERVICES				0	
5. SUBAWARDS				0	
6. OTHER				554	
TOTAL OTHER DIRECT COSTS				1,108	
H. TOTAL DIRECT COSTS (A THROUGH G)				36,334	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **Modified Direct Costs (Rate: 41.5000, Base: 32931)**					
TOTAL INDIRECT COSTS (F&A)				13,666	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				50,000	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				0	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ 50,000	$

M. COST SHARING PROPOSED LEVEL $ 0 | AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE* Joe Thompson — DATE

ORG. REP. TYPED NAME & SIGNATURE* — DATE 4/16/04

FOR NSF USE ONLY		
INDIRECT COST RATE VERIFICATION		
Date Checked	Date Of Rate Sheet	Initials - ORG

NSF Form 1030 (10/98) Supersedes all previous editions

4 *SIGNATURES REQUIRED ONLY FOR REVISED BUDGET (GPG III.B)

SUMMARY PROPOSAL BUDGET

YEAR 5

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Mississippi State University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Joe Thompson**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. Joe Thompson - PI	0.00	0.00	0.00	$ 0	$
2. Donna S Reese - Sr. Pers.	0.00	0.00	1.50	15,540	
3.					
4.					
5.					
6. (0) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	0.00	0.00	0.00	0	
7. (2) TOTAL SENIOR PERSONNEL (1 - 6)	0.00	0.00	1.50	15,540	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (0) POST DOCTORAL ASSOCIATES	0.00	0.00	0.00	0	
2. (0) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	0.00	0.00	0.00	0	
3. (1) GRADUATE STUDENTS				12,000	
4. (0) UNDERGRADUATE STUDENTS				0	
5. (0) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				0	
6. (0) OTHER				0	
TOTAL SALARIES AND WAGES (A + B)				27,540	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				7,269	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				34,809	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				0	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				1,100	
2. FOREIGN				0	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ 0					
2. TRAVEL 0					
3. SUBSISTENCE 0					
4. OTHER 0					
(0) TOTAL PARTICIPANT COSTS				0	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				238	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				0	
3. CONSULTANT SERVICES				0	
4. COMPUTER SERVICES				0	
5. SUBAWARDS				0	
6. OTHER				237	
TOTAL OTHER DIRECT COSTS				475	
H. TOTAL DIRECT COSTS (A THROUGH G)				36,384	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **Modified Direct Costs (Rate: 41.5000, Base: 32810)**					
TOTAL INDIRECT COSTS (F&A)				13,616	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				50,000	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				0	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ 50,000	$

M. COST SHARING PROPOSED LEVEL $ 0 AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE*: Joe Thompson Joe F. Thompson DATE

ORG. REP. TYPED NAME & SIGNATURE*: Marion Clemmer DATE 4/14/04

FOR NSF USE ONLY		
INDIRECT COST RATE VERIFICATION		
Date Checked	Date Of Rate Sheet	Initials - ORG

SUMMARY PROPOSAL BUDGET

Cumulative

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION: **Mississippi State University**

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR: **Joe Thompson**

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-mos. CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. Joe Thompson - PI	0.00	0.00	0.00	$ 0	$
2. Donna S Reese - Sr. Pers.	0.00	0.00	8.50	79,491	
3.					
4.					
5.					
6. ( ) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	0.00	0.00	0.00	0	
7. (2) TOTAL SENIOR PERSONNEL (1 - 6)	0.00	0.00	8.50	79,491	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (0) POST DOCTORAL ASSOCIATES	0.00	0.00	0.00	0	
2. (0) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	0.00	0.00	0.00	0	
3. (5) GRADUATE STUDENTS				60,000	
4. (0) UNDERGRADUATE STUDENTS				0	
5. (0) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)				0	
6. (0) OTHER				0	
TOTAL SALARIES AND WAGES (A + B)				139,491	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				35,128	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				174,619	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				0	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				4,100	
2. FOREIGN				0	
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $ 0					
2. TRAVEL 0					
3. SUBSISTENCE 0					
4. OTHER 0					
(0) TOTAL PARTICIPANT COSTS				0	
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				1,362	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION				0	
3. CONSULTANT SERVICES				0	
4. COMPUTER SERVICES				0	
5. SUBAWARDS				0	
6. OTHER				1,362	
TOTAL OTHER DIRECT COSTS				2,724	
H. TOTAL DIRECT COSTS (A THROUGH G)				181,443	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE)					
TOTAL INDIRECT COSTS (F&A)				68,558	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				250,001	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECTS SEE GPG II.D.7.j.)				0	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$ 250,001	$

M. COST SHARING PROPOSED LEVEL $ 0 | AGREED LEVEL IF DIFFERENT $

PI / PD TYPED NAME & SIGNATURE* Joe Thompson Joe T. Thompson DATE

ORG. REP. TYPED NAME & SIGNATURE* Marilyn Hammons DATE 4/1/02

FOR NSF USE ONLY		
INDIRECT COST RATE VERIFICATION		
Date Checked	Date Of Rate Sheet	Initials - ORG

NSF Form 1030 (10/98) Supersedes all previous editions

C*SIGNATURES REQUIRED ONLY FOR REVISED BUDGET (GPG III.B)

CERTIFICATION PAGE

Certification for Principal Investigators and Co-Principal Investigators

I certify to the best of my knowledge that:

(1) the statements herein (excluding scientific hypotheses and scientific opinions) are true and complete, and
(2) the text and graphics herein as well as any accompanying publications or other documents, unless otherwise indicated, are the original work of the signatories or individuals working under their supervision. I agree to accept responsibility for the scientific conduct of the project and to provide the required progress reports if an award is made as a result of this application.

I understand that the willful provision of false information or concealing a material fact in this proposal or any other communication submitted to NSF is criminal offense (U.S.Code, Title 18, Section 1001).

Name (Typed)	Signature	Date
PI/PD Dr. William Lupton, Chair		April 10, 2000
Co-PI/PD		
Co-PI/PD		
Co-PI/PD		
Co-PI/PD		

Certification for Authorized Organizational Representative or Individual Applicant

By signing and submitting this proposal, the individual applicant or the authorized official of the applicant institution is: (1) certifying that statements herein are true and complete to the best of his/her knowledge; and (2) agreeing to accept the obligation to comply with NSF award terms and an award is made as a result of this application. Further, the applicant is hereby providing certifications regarding Federal debt status, debarment and suspension, drugfree workplace, and lobbying activities (see below), as set forth in the *Grant Proposal Guide (GPG)*, NSF 95-27. Willful provision of false information in this application and its supporting documents or in reports required under an ensuing award is a criminal offense (U.S. Code, Title Section 1001).

In addition, if the applicant institution employs more than fifty persons, the authorized official of the applicant institution is certifying that the institution implemented a written and enforced conflict of interest policy that is consistent with the provisions of *Grant Policy Manual* Section 510; that to the best his/her knowledge, all financial disclosures required by that conflict of interest policy have been made; and that all identified conflicts of interest will been satisfactorily managed, reduced or eliminated prior to the institution's expenditure of any funds under the award, in accordance with the conflict of interest policy. Conflicts which cannot be satisfactorily managed, reduced or eliminated must be disclosed to NSF.

Debt and Debarment Certifications (If answer "yes" to either, please provide explanation.)

Is the organization delinquent on any Federal debt? Yes ☐ No ☒

Is the organization or its principals presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal Department or agency? Yes ☐ No ☒

Certification Regarding Lobbying

This certification is required for an award of a Federal contract, grant or cooperative agreement exceeding $100,000 and for an award of a Federal loan a commitment providing for the United States to insure or guarantee a loan exceeding $150,000.

Certification for Contracts, Grants, Loans and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress connection with the awarding of any federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer employee of any agency, a Member of Congress, and officer or employee of Congress, or an employee of a Member of Congress in connection with Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements and that all subrecipients shall certify and disclose.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

AUTHORIZED ORGANIZATIONAL REPRESENTATIVE	SIGNATURE	DATE
NAME/TITLE (TYPED) Mr. Abraham Moore, V.P.		4/13/00

TELEPHONE NUMBER	ELECTRONIC MAIL ADDRESS	FAX NUMBER
443-885-3144	AMOORE@ MOAC.MORGAN.EDU	410-319-3872

SUMMARY PROPOSAL BUDGET Year #1

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (MONTHS) Proposed	Granted
AWARD NO.		

ORGANIZATION
Morgan State University, Computer Science Department

PRINCIPAL INVESTIGATOR/PROJECT DIRECTOR
Dr. William Lupton, Department Chair

A. SENIOR PERSONNEL: PI/PD, Co-PIs, Faculty and Other Senior Associates List each separately with name and title. (A.7. Show number in brackets)	NSF-Funded Person-months CAL	ACAD	SUMR	Funds Requested By Proposer	Funds Granted by NSF (If Different)
1. Shirl Byron, Project Coordinator				$12,000	$
2.					
3.					
4.					
5.					
6. ( ) OTHERS (LIST INDIVIDUALLY ON BUDGET EXPLANATION PAGE)					
7. (1) TOTAL SENIOR PERSONNEL (1-6)					
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. ( ) POSTDOCTORAL ASSOCIATES					
2. ( ) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)					
3. ( ) GRADUATE STUDENTS					
4. (2) UNDERGRADUATE STUDENTS				$ 8,000	
5. ( ) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)					
6. ( ) OTHER					
TOTAL SALARIES AND WAGES (A + B)				$20,000	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				$ 5,000	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**$25,000**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				$14,000	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				$ 5,000	
2. FOREIGN					
F. PARTICIPANT SUPPORT 1. STIPENDS $ _____ 2. TRAVEL _____ 3. SUBSISTENCE _____ 4. OTHER					
TOTAL NUMBER OF PARTICIPANTS ( ) TOTAL PARTICIPANT COSTS					
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				$ 2,500	
2. PUBLICATION/DOCUMENTATION/DISSEMINATION					
3. CONSULTANT SERVICES				$ 3,000	
4. COMPUTER SERVICES					
5. SUBAWARDS					
6. OTHER				$ 500	
TOTAL OTHER DIRECT COSTS					
H. TOTAL DIRECT COSTS (A THROUGH G)				**$50,000**	
I. INDIRECT COSTS (F&A) (SPECIFY RATE AND BASE)					
TOTAL INDIRECT COSTS (F&A)					
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**$50,000**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECT SEE GPG II.D.7.j.)					
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				**$50,000**	$

M. COST SHARING: PROPOSED LEVEL $ | AGREED LEVEL IF DIFFERENT: $

PI/PD TYPED NAME AND SIGNATURE*
Dr. William Lupton, Chair, Computer Science Department

DATE

FOR NSF USE ONLY
INDIRECT COST RATE VERIFICATION

SUMMARY PROPOSAL BUDGET Year #2

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (MONTHS) Proposed	Granted
AWARD NO.		

ORGANIZATION
Morgan State University, Computer Science Department

PRINCIPAL INVESTIGATOR/PROJECT DIRECTOR
Dr. William Lupton, Department Chair

A. SENIOR PERSONNEL: PI/PD, Co-PIs, Faculty and Other Senior Associates List each separately with name and title. (A.7. Show number in brackets)	NSF-Funded Person-months CAL	ACAD	SUMR	Funds Requested By Proposer	Funds Granted by NSF (If Different)
1. Shirl Byron, Project Coordinator				$12,000	$
2.					
3.					
4.					
5.					
6. ( ) OTHERS (LIST INDIVIDUALLY ON BUDGET EXPLANATION PAGE)					
7. (1) TOTAL SENIOR PERSONNEL (1-6)					
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. ( ) POSTDOCTORAL ASSOCIATES					
2. ( ) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)					
3. ( ) GRADUATE STUDENTS					
4. (2) UNDERGRADUATE STUDENTS				$ 8,000	
5. ( ) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)					
6. ( ) OTHER					
TOTAL SALARIES AND WAGES (A + B)				$20,000	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				$ 5,000	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**$25,000**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				$14,000	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				$ 5,000	
2. FOREIGN					
F. PARTICIPANT SUPPORT 1. STIPENDS $ _____ 2. TRAVEL _____ 3. SUBSISTENCE _____ 4. OTHER					
TOTAL NUMBER OF PARTICIPANTS ( ) TOTAL PARTICIPANT COSTS					
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				$ 2,500	
2. PUBLICATION/DOCUMENTATION/DISSEMINATION					
3. CONSULTANT SERVICES				$ 3,000	
4. COMPUTER SERVICES					
5. SUBAWARDS					
6. OTHER				$ 500	
TOTAL OTHER DIRECT COSTS					
H. TOTAL DIRECT COSTS (A THROUGH G)				**$50,000**	
I. INDIRECT COSTS (F&A) (SPECIFY RATE AND BASE)					
TOTAL INDIRECT COSTS (F&A)					
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**$50,000**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECT SEE GPG II.D.7.j.)					
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				**$50,000**	$

M. COST SHARING: PROPOSED LEVEL $ | AGREED LEVEL IF DIFFERENT: $

PI/PD TYPED NAME AND SIGNATURE*
Dr. William Lupton, Chair, Computer Science Department

DATE

FOR NSF USE ONLY
INDIRECT COST RATE VERIFICATION

SUMMARY PROPOSAL BUDGET Year #3

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (MONTHS) Proposed	Granted
AWARD NO.		

ORGANIZATION
Morgan State University, Computer Science Department

PRINCIPAL INVESTIGATOR/PROJECT DIRECTOR
Dr. William Lupton, Department Chair

A. SENIOR PERSONNEL: PI/PD, Co-PIs, Faculty and Other Senior Associates List each separately with name and title. (A.7. Show number in brackets)	NSF-Funded Person-months CAL	ACAD	SUMR	Funds Requested By Proposer	Funds Granted by NSF (If Different)
1. Shirl Byron Project Coordinator				$12,000	$
2.					
3.					
4.					
5.					
6. ( ) OTHERS (LIST INDIVIDUALLY ON BUDGET EXPLANATION PAGE)					
7. (1) TOTAL SENIOR PERSONNEL (1-6)					
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. ( ) POSTDOCTORAL ASSOCIATES					
2. ( ) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)					
3. ( ) GRADUATE STUDENTS					
4. (2) UNDERGRADUATE STUDENTS				$ 8,000	
5. ( ) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)					
6. ( ) OTHER					
TOTAL SALARIES AND WAGES (A + B)				$20,000	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				$ 5,000	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**$25,000**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				$14,000	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				$ 5,000	
2. FOREIGN					
F. PARTICIPANT SUPPORT 1. STIPENDS $ 2. TRAVEL 3. SUBSISTENCE 4. OTHER					
TOTAL NUMBER OF PARTICIPANTS ( ) TOTAL PARTICIPANT COSTS					
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				$ 2,500	
2. PUBLICATION/DOCUMENTATION/DISSEMINATION					
3. CONSULTANT SERVICES				$ 3,000	
4. COMPUTER SERVICES					
5. SUBAWARDS					
6. OTHER				$ 500	
TOTAL OTHER DIRECT COSTS					
H. TOTAL DIRECT COSTS (A THROUGH G)				**$50,000**	
I. INDIRECT COSTS (F&A) (SPECIFY RATE AND BASE)					
TOTAL INDIRECT COSTS (F&A)					
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**$50,000**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECT SEE GPG II.D.7.j.)					
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				**$50,000**	$

M. COST SHARING: PROPOSED LEVEL $	AGREED LEVEL IF DIFFERENT: $
PI/PD TYPED NAME AND SIGNATURE* Dr. William Lupton, Chair, Computer Science Department	DATE

FOR NSF USE ONLY
INDIRECT COST RATE VERIFICATION

SUMMARY PROPOSAL BUDGET Year #4

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (MONTHS) Proposed	Granted
AWARD NO.		

ORGANIZATION
Morgan State University, Computer Science Department

PRINCIPAL INVESTIGATOR/PROJECT DIRECTOR
Dr. William Lupton, Department Chair

A. SENIOR PERSONNEL: PI/PD, Co-PIs, Faculty and Other Senior Associates List each separately with name and title. (A.7. Show number in brackets)	NSF-Funded Person-months CAL	ACAD	SUMR	Funds Requested By Proposer	Funds Granted by NSF (If Different)
1. Shirl Byron Project Coordinator				$12,000	$
2.					
3.					
4.					
5.					
6. ( ) OTHERS (LIST INDIVIDUALLY ON BUDGET EXPLANATION PAGE)					
7. (1) TOTAL SENIOR PERSONNEL (1-6)					
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. ( ) POSTDOCTORAL ASSOCIATES					
2. ( ) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)					
3. ( ) GRADUATE STUDENTS					
4. (2) UNDERGRADUATE STUDENTS				$ 8,000	
5. ( ) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)					
6. ( ) OTHER					
TOTAL SALARIES AND WAGES (A + B)				$20,000	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				$ 5,000	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**$25,000**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				$14,000	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				$ 5,000	
2. FOREIGN					
F. PARTICIPANT SUPPORT 1. STIPENDS $ _____ 2. TRAVEL _____ 3. SUBSISTENCE _____ 4. OTHER					
TOTAL NUMBER OF PARTICIPANTS ( ) TOTAL PARTICIPANT COSTS					
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				$ 2,500	
2. PUBLICATION/DOCUMENTATION/DISSEMINATION					
3. CONSULTANT SERVICES				$ 3,000	
4. COMPUTER SERVICES					
5. SUBAWARDS					
6. OTHER				$ 500	
TOTAL OTHER DIRECT COSTS					
H. TOTAL DIRECT COSTS (A THROUGH G)				$50,000	
I. INDIRECT COSTS (F&A) (SPECIFY RATE AND BASE)					
TOTAL INDIRECT COSTS (F&A)					
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**$50,000**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECT SEE GPG II.D.7.j.)					
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				$50,000	$

M. COST SHARING: PROPOSED LEVEL $	AGREED LEVEL IF DIFFERENT: $
PI/PD TYPED NAME AND SIGNATURE* Dr. William Lupton, Chair, Computer Science Department	DATE

FOR NSF USE ONLY
INDIRECT COST RATE VERIFICATION

SUMMARY PROPOSAL BUDGET Year #5

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (MONTHS) Proposed	Granted
AWARD NO.		

ORGANIZATION
Morgan State University, Computer Science Department

PRINCIPAL INVESTIGATOR/PROJECT DIRECTOR
Dr. William Lupton, Department Chair

A. SENIOR PERSONNEL: PI/PD, Co-PIs, Faculty and Other Senior Associates List each separately with name and title. (A.7. Show number in brackets)	NSF-Funded Person-months CAL	ACAD	SUMR	Funds Requested By Proposer	Funds Granted by NS (If Different
1. Shirl Byron Project Coordinator				$12,000	$
2.					
3.					
4.					
5.					
6. ( ) OTHERS (LIST INDIVIDUALLY ON BUDGET EXPLANATION PAGE)					
7. (1) TOTAL SENIOR PERSONNEL (1-6)					
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. ( ) POSTDOCTORAL ASSOCIATES					
2. ( ) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)					
3. ( ) GRADUATE STUDENTS					
4. (2) UNDERGRADUATE STUDENTS				$ 8,000	
5. ( ) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)					
6. ( ) OTHER					
TOTAL SALARIES AND WAGES (A + B)				$20,000	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				$ 5,000	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				**$25,000**	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT				$14,000	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				$ 5,000	
2. FOREIGN					
F. PARTICIPANT SUPPORT 1. STIPENDS $ _____ 2. TRAVEL _____ 3. SUBSISTENCE _____ 4. OTHER					
TOTAL NUMBER OF PARTICIPANTS ( ) TOTAL PARTICIPANT COSTS					
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES				$ 2,500	
2. PUBLICATION/DOCUMENTATION/DISSEMINATION					
3. CONSULTANT SERVICES				$ 3,000	
4. COMPUTER SERVICES					
5. SUBAWARDS					
6. OTHER				$ 500	
TOTAL OTHER DIRECT COSTS					
H. TOTAL DIRECT COSTS (A THROUGH G)				**$50,000**	
I. INDIRECT COSTS (F&A) (SPECIFY RATE AND BASE)					
TOTAL INDIRECT COSTS (F&A)					
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				**$50,000**	
K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECT SEE GPG II.D.7.j.)					
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)				**$50,000**	$

M. COST SHARING: PROPOSED LEVEL $	AGREED LEVEL IF DIFFERENT: $
PI/PD TYPED NAME AND SIGNATURE* Dr. William Lupton, Chair,Computer Science Department	DATE

FOR NSF USE ONLY
INDIRECT COST RATE VERIFICATION

SUMMARY PROPOSAL BUDGET (Five Years)

[redacted]

ORGANIZATION
Morgan State University, Computer Science Department

PRINCIPAL INVESTIGATOR/PROJECT DIRECTOR
Dr. William Luptor, Department Chair

A. SENIOR PERSONNEL: PI/PD, Co-PIs, Faculty and Other Senior Associates List each separately with name and title. (A.7. Show number in brackets)	NSF-Funded Person-months			Funds Requested By Proposer	Funds Granted by NSF (If Different)
	CAL	ACAD	SUMR		
1. Shirl Byron, Project Coordinator			15mos	$60,000.	$
2.					
3.					
4.					
5.					
6. ( ) OTHERS (LIST INDIVIDUALLY ON BUDGET EXPLANATION PAGE)					
7. (1) TOTAL SENIOR PERSONNEL (1-6)					
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)	[redacted]				
1. ( ) POSTDOCTORAL ASSOCIATES					
2. ( ) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)					
3. ( ) GRADUATE STUDENTS					
4. (2) UNDERGRADUATE STUDENTS				$40,000.	
5. ( ) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)					
6. ( ) OTHER					
TOTAL SALARIES AND WAGES (A + B)				$100,000.	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)				$25,000.	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)				$125,000.	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)				[redacted]	
TOTAL EQUIPMENT				$70,000.	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)				$25,000	
2. FOREIGN					
F. PARTICIPANT SUPPORT				[redacted]	
1. STIPENDS $					
2. TRAVEL					
3. SUBSISTENCE					
4. OTHER					
TOTAL NUMBER OF PARTICIPANTS ( ) TOTAL PARTICIPANT COSTS					
G. OTHER DIRECT COSTS				[redacted]	
1. MATERIALS AND SUPPLIES				$12,500	
2. PUBLICATION/DOCUMENTATION/DISSEMINATION					
3. CONSULTANT SERVICES				$15,000	
4. COMPUTER SERVICES					
5. SUBAWARDS					
6. OTHER				$2,500	
TOTAL OTHER DIRECT COSTS					
H. TOTAL DIRECT COSTS (A THROUGH G)				$250,000	
I. INDIRECT COSTS (F&A) (SPECIFY RATE AND BASE)				[redacted]	
TOTAL INDIRECT COSTS (F&A)					
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)				$250,000	

K. RESIDUAL FUNDS (IF FOR FURTHER SUPPORT OF CURRENT PROJECT SEE GPG II.D.7.j.)		
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)	$250,000	$

M. COST SHARING: PROPOSED LEVEL $	AGREED LEVEL IF DIFFERENT: $
PI/PD TYPED NAME AND SIGNATURE* Dr. William Lupton, Chair, Computer Science Department	DATE 4/13/00
ORG. REP. TYPED NAME & SIGNATURE Mr. Abraham Moore, Vice President-Finance and Management	DATE 4/13/00

NSF Form 1030 (10/99) *Supersedes All Previous Editions*

*SIGNATURES REQUIRED ONLY FOR REVISED BUDGET (GPG III.C)