The Flagship IT Strategy Update: Supporting LSU’s Advance to National Prominence

Louisiana State University’s Information Technology Strategic Plan Progress Report

January 2009
The Flagship Information Technology Strategy Update

Table of Contents

A. Foreword ................................................................. 4

B. Executive Summary .................................................. 6

C. Progress Report
   Recommendation I: Infrastructure ................................ 10
   Recommendation II: Accessibility ................................. 14
   Recommendation III: Support ...................................... 18
   Recommendation IV: Fiscal Planning .............................. 21
   Recommendation V: Security ....................................... 25
   Recommendation VI: Research Enablement ...................... 28
   Recommendation VII: Teaching & Learning Enablement ...... 32
   Recommendation VIII: Information Systems ................... 34
   Recommendation IX: Student Information Technology ....... 39
   Recommendation X: Community Involvement .................. 41
Dear Colleagues,

In my foreword letter for the *Flagship IT Strategy* published in December 2006, I highlighted that the FITS set a course for progress in building a new IT infrastructure at LSU; that it gave us a blueprint for IT advancement, and served to document what the LSU community felt was needed and why those things were important. Two years have passed since then. The FITS has remained relevant and also fluid – providing the flexible framework that responds to the changing nature of information technology, and the changing needs of LSU students, faculty, and staff. It continues serving that role as blueprint as we continue implementation of its vision, but also as a way for us to benchmark progress achieved along the way. That is the purpose of this document, which follows the FITS action item by action item, providing details of progress for each of the 84 items within the strategy.

The broad LSU community should be proudly aware of the progress we have made together in advancing IT at LSU to levels approaching national prominence in the field. Indeed, we have come a long way in two short years! As the cover of this report suggests, the pieces are coming together for LSU. We have made significant progress across all 10 areas of recommendation, and should by the end of 2009 be well past the halfway mark in our sojourn to IT abundance. We are firming up our basic IT infrastructure and also seeing progress on some of the more advanced elements. In “IT circles” LSU is being viewed as a leader. This year LSU achieved “Tier-1” status as an institution; we are assuming a position of national prominence in the provision of information technology at universities, establishing leadership positions in network infrastructure (wired and wireless), cyberinfrastructure, software licensing and distribution, support for the use of IT, security and integrity of our environment, and other key areas.

Yet, as we look forward we still have many and significant items to be addressed to complete the FITS. To paraphrase Robert Frost – *we have promises to keep and miles to go before we sleep.* We must continue – as a community, together – to advocate for campus computer resources so that we can modernize and maintain the IT tools employed by our faculty in their offices and on their laps, and in classrooms and labs throughout our campus, as well as those used by staff to support the broader efforts of the institution. We must seek to not only address the hardware and software aspects of IT, but also continue to improve our focus and investment in the most critical element that makes it all work – *humanware* (people).

We must complete our efforts to ensure that the ‘hub’ of our IT environment – Frey Computing Services Center – is robust enough to host the servers and equipment required
by the campus as a whole, and that these resources are secure in the event of environmental challenges to our campus. We must complete efforts to re-architect our mission critical systems, which are the backbone of our institution’s administration and the service it provides to the campus community of scholars. And we must continue to seek ways to address the need for, and allocation of, ongoing, permanent funding of IT across the institution (especially in the colleges and departments on campus) – even in potentially difficult budgetary times.

We must continue to advance the sets of tools we make available to faculty seeking to use IT to improve their teaching and to advance their research – and at the same time ensure that our students have the IT tools they need to advance their learning and enhance the quality of their lives at LSU. Finally, we must accelerate efforts to improve the communication within the community about IT services, changes in those services that impact people, the costs of IT and rationale behind decisions made regarding IT investments, as well as give the campus community a permanent and influential voice in governing those decisions.

In 2009, do expect to see significant progress in completing FITS action items – more than half should be done when we write the next report a year from now. Also expect to see fruition of efforts to give the campus community more information and metrics providing transparency for the costs of central IT (ITS), and measures of the satisfaction of the community with those central services. Expect to see the emergence of formal governance structures that will engage faculty, students, and staff in continued operations as well as additional strategic guidance on FITS implementation. And expect a call to that governance structure, and the broad community, to perform a “mid-course” review of the FITS, as we seek to ensure that it remains best articulation of what the campus community wants to see in terms of IT enablement, and why those things are important.

Indeed, we have promises to keep. And miles to go before we sleep.

Brian D. Voss, Vice Chancellor
The Flagship IT Strategy Update serves as a progress report of the University’s success at meeting many of the goals set forth by the community. Two years after the publication of the Flagship IT Strategy, LSU has well over one half of its action items either implemented or in progress. A quarter of its items require additional funding in order to be completed—which may seem difficult in light of constrained budgets—however through leveraged purchases, streamlined operations, and realized cost savings (because of FITS progress), we remain cautiously optimistic.

Significant progress has been made across the original FITS recommendations. This is especially noticeable in the progress made with regard to infrastructure and access (Recommendations I and II), user support (Recommendation III), IT security (Recommendation V), and information systems (Recommendation VIII). While key improvements have been made to the overall IT infrastructure, funding for lifecycle replacement of classrooms and labs (outside of those supported by the Student Tech Fee) remains a high priority, as does a similar initiative for faculty and staff computers. Long term work remains underway in information systems, and while progress is being made on vital systems, architectures and infrastructures, continued development remains dependent on the continued availability of the fiscal resources dedicated to them. Every component of FITS, whether already implemented or remaining, has associated life cycle replacement costs and “humanware” associated with it. Overall the community’s commitment to the Flagship Information Technology Strategy must remain strong in order to preserve the progress made to date and to assure the campus’s vision of IT abundance becomes a reality.
<table>
<thead>
<tr>
<th>FITS Action Item</th>
<th>Implemented</th>
<th>Funding Needed</th>
<th>In Progress</th>
<th>Additional Planning Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.01 Personal computers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.02 Classrooms/Labs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.03 Inventory</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.04 Frey</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.05 Facilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.06 Network</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.07 E-mail</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.08 Flexible infrastructure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.09 Wireless</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.10 Mobile power</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.11 Recycling</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.01 Access to software</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.02 Specialized IT tools</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.03 Kiosks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.04 IT Commons</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.05 Off campus access</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.06 IT upon hire</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.07 Diverse platforms</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.08 Emerging tech</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.09 IT skills</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.10 Electronic resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.01 Robust support</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.02 24x7 support</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.03 Distributed support</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.04 CAS and CELT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.05 Increase IT professionals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.06 Training and certification</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.07 Help Desk expertise</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.08 Vended documentation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.09 Local documentation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.01 Life-cycle replacement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.02 IT budget per FTE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.03 Campus-wide agreements</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.04 Coordinated funding for HPC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.05 Grant supported life-cycle</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.06 Support costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.07 Additional student fee</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.08 STF use for FTE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.09 Creative funding for backlog</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.10 Leveraged support pilot</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.01 Review of Security Audit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.02 Policies for IT security</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.03 IT security programs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.04 Physical security</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.05 Data backups</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.06 SSN removal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.07 Committee on Data</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Section</td>
<td>Title</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>-------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.08</td>
<td>IT business continuity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.09</td>
<td>Security Advisory Team</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.01</td>
<td>Top 100 HPC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.02</td>
<td>Build capacity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.03</td>
<td>Allocation of cycles</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.04</td>
<td>Use of national resources</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.05</td>
<td>Nontraditional use of HPC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.06</td>
<td>Specialized support centers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.07</td>
<td>Advanced software/tools</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.08</td>
<td>Document sharing tools</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.09</td>
<td>Training in research IT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.10</td>
<td>Emerging tech seminars</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.11</td>
<td>Coordinate IT islands</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.01</td>
<td>Single CMS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.02</td>
<td>Discipline specific laptops</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.03</td>
<td>Online advising tools</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.04</td>
<td>Wireless usage in class</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.05</td>
<td>E-texts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.06</td>
<td>Computer based testing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.07</td>
<td>Faculty use of IT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.01</td>
<td>Info sys backlog</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.02</td>
<td>Prioritization of systems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.03</td>
<td>Info system liaisons</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.04</td>
<td>Continued development</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.05</td>
<td>Consolidated info delivery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.06</td>
<td>User-centered design</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.07</td>
<td>Evolving systems</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.08</td>
<td>Build, borrow, buy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.09</td>
<td>Tiered storage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.10</td>
<td>Service architecture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.01</td>
<td>Student IT training</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.02</td>
<td>Increase ownership</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.03</td>
<td>Recreational use of IT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.04</td>
<td>IT enabled living/learning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.01</td>
<td>Community involvement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.02</td>
<td>IT Web</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.03</td>
<td>Activity base costing</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
RECOMMENDATION I
Build a solid foundation of IT infrastructure at LSU that is modern and kept up-to-date.

ACTION ITEM 1.01
The University should provide its employees with the modern information technology needed to be productive, including a standard level of personal computers. As a part of this, the University should provide centralized life cycle replacement for its stock of computers.

This action item requires additional funding to be realized. Planning has occurred for the implementation of this action item via a Campus Computer Resources Project, which would address needs as a priority for pedagogical applications (Labs and Classrooms) and then address personal productivity needs of faculty and staff. The plan calls for a one-time exercise to modernize the campus’ stock of computers, to replace any that are not capable of running today’s operating systems and applications – likely replacing any machine that is older than 2.5 years. It is estimated that to do so would take approximately $3-million in one-time funds. Establishing a life-cycle funding program would require another $800,000 in new ongoing funding, which would leverage existing funds that are deployed by the colleges to this purpose. Aside from funding, challenges must be addressed in developing mechanisms for implementation and ongoing replacement – whether this would feature a distributed funding model or a centralized “pool” must be determined based upon what is best and most practical for LSU.

ACTION ITEM 1.02
Classrooms and labs should have standardized, basic multimedia functions that are “the latest and greatest technologies,” upgraded regularly, and well-maintained.

Additional funding is needed. More than 75 percent of the 207 classrooms on campus are now equipped with basic multimedia functions, and in the past two years, interactive “smartboard” technology has been strategically placed in a dozen classrooms. These facilities are regularly maintained with both full-time staff and students on-call to assist faculty before and during lectures. In addition, faculty may select from a wide range of multimedia equipment which can be custom configured on mobile carts for use anywhere on campus. To keep pace with rapidly evolving technologies and the desire to incorporate more multimedia for both traditional and distance learning, a needs
assessment should be conducted to prepare LSU for the next phase of multimedia classroom deployment.

**ACTION ITEM 1.03 ★**

To begin the process of modernizing basic infrastructure and to support subsequent actions regarding sound fiscal planning, an inventory of all of the institution's information technology assets should be commissioned and completed.

This action item was completed in 2007. A survey was taken of the campus to determine the approximate value of the installed base of computers and associated peripheral equipment. Numbers in the survey were compared with other sources to reach a basis from which a calculation revealed that the size of the overall 'base' is about $12-million dollars. The basis for the Campus Computer Resources Project was formed in this process.

**ACTION ITEM 1.04 ★**

In order for the University to continue its advances, significant resources must be directed to the overall design, development, modernization, and maintenance of a robust central computing center (Frey Computing Services Center).

This action item requires additional funding which we believe will be provided by the University. Several advances have been made including the purchase of air handlers, chillers, and a UPS. Recently, a contract was awarded for a project to increase the amount of power delivered to Frey. The remaining items include the installation of the air handlers and chillers, the installation of the duct work which will deliver chilled water to the data center, the UPS installation, and the purchase and installation of a generator. The remaining items are being fast-tracked in a capital outlay project. The estimated time of completion is one to two years.

**ACTION ITEM 1.05 ★**

The IT infrastructure needs of future buildings on the LSU campus—especially computing-intensive facilities—must be addressed prior to construction.

ITS works closely with Facility Services and the building project team to design a robust and reliable network in the planning stages of every project. The design also includes providing appropriate fiber and copper cable to feed the building in question, as well as appropriate electronics. These costs are communicated during the plan.
ACTION ITEM 1.06 ★
The campus network, and its connections to external networks (both commodity Internet and advanced research networks), must be able to handle large volumes of traffic and be nearly flawless in its reliability and availability.
This action item was implemented with the completion of Network 2010. Significant investments were made by the University to upgrade our network and greatly increase the bandwidth available to our researchers. While implemented, this item requires continued upgrades in order to remain fully functional in the long-term. It is foreseeable that LSU would increase our bandwidth allotment through LONI and support the installation of an additional LONI node at David Boyd Hall in order to provide redundancy for Internet connectivity.

ACTION ITEM 1.07 ★
Electronic mail systems are the heart of communication infrastructure for LSU community members, and a key network utility fostering collaboration and communication across the institution and, more broadly, to the outside world. In today’s world of high e-mail volumes and large attachments, a service suite for e-mail that provides adequate storage and options for user interfaces must be deployed as part of the basic network services infrastructure at LSU.
In 2006, LSU moved from its outdated and undersized electronic mail environment to the Microsoft Exchange system. This involved the provisioning of a standard storage quota of one (1) gigabyte per mailbox, with provisions for high-volume users to acquire additional space at a reasonable cost ($38.01 per year per gigabyte, $50.35 per mailbox). This environment continues to serve LSU well today. While this action item is completed, the evaluation of e-mail services is an ongoing function. New developments in terms of outsourced options (Cloud Computing) may provide even more cost effective and user-rich alternatives in the coming years. Student e-mail was outsourced in 2004 to Outblaze, and substantial functional benefits were achieved at significant savings over institutionally-hosted options; this process continues to evolve, as plans are now in place to move students to Google's e-mail application in 2009, which will feature a $0-cost model. While there are well articulated differences between the individual-use profile of students and the institutional-use profile of faculty and staff, ITS believes there will be better, cheaper solutions available for this user base as early as 2010.

ACTION ITEM 1.08 ★
The IT infrastructure at LSU should be flexible enough in its architecture to respond to innovation and changing needs/priorities, and take advantage of a wide variety of opportunities presented by the marketplace. Decisions on vendors must be made with an eye toward maintaining this flexibility. It does not seem wise for LSU to “single source” itself with one IT vendor, but instead, to use a variety of architectures and a strategic suite of diverse technology vendors.
ITS has moved away, strategically, from a single-source model beginning as early as 2006 when the lab machines were replaced with Dell equipment via their successful low-bid on that acquisition. ITS now operates in a mentality of evaluating purchases for
all equipment in the view that most purchases are commodity in nature, and should go
to the lowest qualifying bid/vendor. This is true not only for desktop/laptop computer
hardware, but also for central server equipment and network gear. ITS has also led
efforts to diversify platforms, increasing its support for Macintosh platforms though the
acquisition of such for the labs in 2007. At this time, ITS considers the view that ‘a
garden of architectures’ is necessary for IT abundance across every application (pedestrian, pedagogical, administrative, and research). The key to the success of this
initiative is a willingness to broaden support structures to be inclusive of varied
offerings and to also broaden and modernize architectures supported, especially in
administrative systems in the future.

**ACTION ITEM 1.09**

**The University-wide deployment of wireless network infrastructure should be
advanced so that such access is ubiquitous and pervasive.**

This action item is complete. Network 2010 provided an additional 800 wireless
access points. The entire campus, including outdoor areas, is now covered by
more than 1,500 access points. There is a separate project currently underway to
install wireless in the residence halls. Reserved access points are utilized to
improve coverage as necessary. Lifecycle is accounted for in the network plan.

**ACTION ITEM 1.10**

**Realizing that the paradigm for personal computing is transforming to one far
more dependent upon mobile technologies (such as laptops and personal
digital assistant devices), the University should plan for the power needs of
these devices, specifically, by finding ways to allow the mobile user to re-
charge batteries or exchange common batteries.**

While some progress has been made on this action item, additional planning is
required. Given that LSU negotiated reduced student pricing for laptops and desktops
from major vendors (Apple, Dell, IBM, Lenovo, Toshiba) in order to achieve an
environment of IT abundance and richness independent of brand or platform, this also
means that students (as well as faculty and staff) arrive on campus with a wide variety
of devices that do not share common/interchangeable batteries. Further, as the campus
strives to become “greener” in its consumption of power, ITS and Student Government
have recently entered into discussions about how to encourage and promote the use of
solar power for recharging laptops, cell phones, iPods and other handhelds. Fortunately,
the marketplace has responded to the interest in green computing with laptops that
require less power, and with everything from foldable briefcase sized solar panels to
backpacks that come equipped with a small solar panel on the back. By exploring the
addition of these products to the LSU bookstore product line, or perhaps to the Gear-to-
Geaux program, it is hoped that some of the need for power can be satisfied with an eye
to environmental sustainability. Nonetheless, creative technologies for portable
charging stations are also being explored.
ACTION ITEM 1.11 ★

Innovative uses of recycled technologies should be encouraged.

Although this action item is never really complete, LSU continues to be a leader in the re-use and recycling of computing technologies, and in the advancement of green computing. Computers that have seen the end of their useful life-cycle in public access labs are repurposed as print pay-stations or Internet kiosks throughout campus, or redeployed as graduate student computers through a student administered reallocation program. Printers in the Public Access Labs all use re-cycled toner cartridges. During 2008, ITS sponsored several events featuring speakers regarding campus recycling efforts and LSU’s partnership with the Capital Area Corporate Recycling Council.

RECOMMENDATION II.

Make significant strides in increasing the accessibility of the LSU community to IT infrastructure and services

ACTION ITEM 2.01 ★★★

All members of the LSU community should have ready access to the IT software they need to succeed.

Since its introduction in 2005, TigerWare (http://tigerware.lsu.edu) has continued to provide all members of the LSU community with 24x7 on-line access to a wide variety of software applications for Windows, Macintosh, and Linux operating systems. The LSU community annually downloads about 400,000 programs from TigerWare. By virtue of the Campus Select agreement with Microsoft, students, faculty, and staff have free access to Microsoft operating system software for office, lab, and home computer use, as well as the full MS Office Enterprise suite for both Windows and Macintosh operating systems. Other campus software agreements provide free home and campus licenses for anti-virus, anti-theft, encryption, bibliographic, and scientific software, and reduced prices on a whole range of programs ranging from statistics (SPSS and SAS) to Web and media production (Adobe CS3, FinalCut) to science software (Mathematica). Additionally, students especially benefit from dozens of commercially licensed software programs installed in the Public Access Labs and available 24x7 on the Virtual Lab. Continued funding for this Action Item will ensure uninterrupted access to these valuable tools.

ACTION ITEM 2.02 ★

All members of the LSU community should have ready access to the specialized IT tools and resources they need to succeed.

In addition to 24 x 7 availability of a wide range of software programs, laptops, digital still and video cameras and related equipment are available for check-out via both the Gear-to-Geaux program (for students), and the classroom check-out program for faculty. In fall 2006, the Information Commons in Middleton Library ushered in a new era of IT enablement at LSU via the addition of new hardware, software and “humanware” resources. The Information Commons includes a fully staffed Help Desk, augmenting in both location and hours of operation the professional IT consulting available to students, faculty and staff, an Adaptive Technology Center, providing specialized
resources and consulting to our vision, hearing, and learning impaired community, and a Print Desk, offering wide-format and color printing and plotting on a variety of devices. The Faculty Technology Center and Visualization Services Center, which both opened in September 2008 in Middleton, serve to augment and focus academic and research computing resources available to faculty and students.

**ACTION ITEM 2.03**
Information stations (e.g., kiosks) with a minimum of electronic mail and Internet access should be placed strategically across campus, to improve the access to communication utilities and information on the Internet.

This action item was completed in 2007. Kiosks are currently located in Allen, Choppin, Coates, Himes, Hodges, Lockett, Music, the Registrar’s Office, the Bursar’s Office, the LSU Student Recreation Center, Tureaud, the LSU Student Union, and Middleton Library.

**ACTION ITEM 2.04**
Information technology “commons” areas should be developed in strategic, centralized, high-traffic areas, such as the Middleton Library and the Union, to promote twenty-first century era collaboration on campus. These “commons” should be showplaces of IT infrastructure and resources, which will promote not only student collaboration, but faculty collaboration as well.

In fall 2006, the Information Commons in Middleton Library opened. The Information Commons, which receives on average 5,000 visitors per day, includes a fully staffed Help Desk, augmenting in both location and hours of operation the professional IT consulting resources available to students, faculty and staff. The Adaptive Technology Center, also developed in 2006, serves our campus vision, hearing, and learning impaired community with large-format screens, a Braille printer, and laptops pre-installed with hearing and vision enhancement software. The opening of the Faculty Technology Center and Visualization Services Center in September, 2008 serves to complement services provided to students by providing a special area for faculty to explore and collaborate. The completion of the new wing of the LSU Student Union building in January 2009 will match on a smaller scale the Information Commons environment in Middleton, in addition to increasing overall hours of operation to 24x7.

**ACTION ITEM 2.05**
Availability of technology should not be limited to the campus. Faculty, students, and staff should have access to information and resources while traveling or at home just as they would on campus. GROK (http://grok.lsu.edu) is an on-line repository of commonly asked campus technology questions and answers. GROK was implemented in 2006, and now contains
over 9,000 articles, frequently updated to ensure relevance and timeliness of information. A complement to GROK, the Virtual Lab (http://vlab.lsu.edu) is an online “virtual” computer lab ensuring LSU students 24x7 access to a wide range of commercial software while at home or on the road. A similar virtual lab for faculty will require additional funding. Faculty and staff have the ability to remotely access their desktops through VPN, arrangements for this may be made through their IT contacts.

ACTION ITEM 2.06 ★

New faculty and staff should have telephone services, e-mail, Internet access, and a suitable personal computer in place upon hire. The Quickstart utility was implemented in Summer 2008, and marks a needed first step in enabling this action item’s completion in the future. While ITS is providing the technical tools, Human Resources is leading the full implementation of progress in this area via the new HR Information System. Quickstart is a utility to enable new faculty and staff to obtain an LSU network ID as soon as they have been notified of their affiliation with LSU and get a head start on acquiring an LSU e-mail and other computing accounts prior to their physical arrival on campus. Additionally, a new interface to the ITS Help Desk software (Footprints) is currently in design to assemble requests for computing accounts, telephone, cell phone, and other services into a single on-line user-friendly screen.

ACTION ITEM 2.07 ★

The University should support the use of multiple and diverse computing platforms (hardware systems and operating systems), and ensure that access to as broad an array as possible of University information systems is available to diverse technology environments. Users should not be limited in their capabilities and abilities to access LSU resources by the platform they are using. Innovation and the development of new technologies should be supported.

This action item has been completed. In 2006, the first Macintosh computers were installed in the Middleton Information Commons, and additional Macintosh computers have since been added to the Public Access Labs in the LSU Student Union, Patrick F. Taylor Hall, and Gym Armory. Apple laptops also comprise a substantial portion of the laptops available in both the Gear-to-Geaux check-out program for students, and the faculty equipment check-out program. ITS Help Desk staff have attended numerous training classes on the Macintosh operating system, and some ITS staff are now Apple certified on many products. GROK abounds with articles on everything from using the LSUsecure network from a Macintosh, to importing clips into iMovie; likewise TigerWare contains dozens of software downloads for the Macintosh. In 2007, ITS helped sponsor the first Mac user group on campus. In addition to establishing more resources and support for Macintosh, many new resources are also available for Linux.
In 2007, ITS opened the first Linux lab on campus in the Middleton Information Commons, and more recently has added software and hardware resources in the Visualization Services Center. TigerWare boasts one of the largest university-maintained software repositories for Linux O/S and utilities.

**ACTION ITEM 2.08 ★**

The University should ensure emerging technologies, such as hand-held PDA devices, and Internet-enabled cellular phones, interface well with common LSU applications.

This action item has been completed. In 2006, GROK became one of the first university-maintained knowledge bases to provide a mobile interface. GROK will soon include a snippet for the iPhone. LSUsecure, a 1500-node campus wireless mesh, provides one of the nation’s largest and most secure wireless networks for laptops and mobile devices with the 802.1x protocol (including iPhones). The ITS Help Desk software (Footprints) will also soon include a wireless interface. The new TigerMail powered by Google Apps will be easier for students to use via mobile technologies than previous e-mail solutions. Technology continues to advance in such a way that newer handheld devices no longer need a specialized mobile view in order to be useful.

**ACTION ITEM 2.09 ★ ★**

Members of the LSU community should possess a minimum of basic IT skills. The University should employ multiple means of skills training—including making freely available basic skills training classes and computer-based training programs—to ensure that adequate training regimes are available to every member of the LSU community.

LSU students, faculty, and staff may avail themselves of a wide range of free workshop-style instruction on a range of topics from Dreamweaver to Moodle Gradebook, to Mathematica. Customized group instruction (for example, to deliver a training workshop in a particular college or department) may also be requested, and drop-in consultations are welcomed at both the Faculty Technology Center and the Visualization Services Center. GROK contains links to freely available software training modules, and instruction on performing individual tasks in popular software programs. However, further funding is required to purchase a campus-wide computer based training (CBT) offering.

**ACTION ITEM 2.10 ★**

Members of the LSU community should have access to the electronic resources (films, journals, research articles, texts, etc.) they need to be productive students and faculty.

This item is in progress. Hundreds of new resources have been added to LSU’s electronic resources collections, including databases, electronic journals, and additional digital library collections. Eleven new databases have been purchased, many with full-text, comprising 9201 titles including *American State Papers & Congressional Serial Set, American Civil War Online, Caribbean Literature*, and the entire eBook collection from Springer for 2005-2009. Also added were 1483 journal backfiles, including *Nature Archives* from 1869-1996, *Sage* journal backfiles, complete Springer Online Journal Archive, and 12 subject collections from the Wiley journal backfiles. 120 new database
or journals subscriptions have been added including *PsychArticles*, the Institute of Physics current journal database; *Source OECD* (Organization for Economic Co-operation and Development, Nature Immunology, Political Analysis, the Journal of Landscape Architecture and Naxos, a new music-streaming database; among many others. There are now 38 collections from LSU in the LOUISiana Digital Library, with over 12,000 images. New digital collections include *Native Flora of Louisiana*, and *Louisiana Ecology and Conservation, The Percy Viosca, Jr. Collection*. This is funding dependent.

---

**RECOMMENDATION III**

Develop a robust, multi-tiered support enterprise to meet the varying levels and specific needs of the LSU user community.

**ACTION ITEM 3.01 ★★**

Support should be robust, easy to use, transparent, and available in multiple levels based upon specific needs of the individual user.

This item is in progress and is funding-dependent. The 2006 launching of the Information Commons in Middleton Library and the Adaptive Technology Center brought new hardware, software and “humanware” resources, including a fully staffed Help Desk, augmenting in both location and hours of operation the professional IT consulting resources available to students, faculty and staff. The Adaptive Technology Center, also developed in 2006, serves our campus vision, hearing, and learning impaired community with training on adaptive technologies and individualized consultations. The opening of the Faculty Technology Center and Visualization Services Center in September 2008 serves to complement services provided to students by providing a special area for faculty to explore and collaborate. The completion of the new wing of the LSU Student Union building in January, 2009 will match on a smaller scale many the Information Commons environment in Middleton, in addition to increasing overall hours of operation to 24x7.

**ACTION ITEM 3.02 ★★**

A one-stop shop for all IT related issues should be developed and properly staffed. Support should be available 24 hours a day, 7 days a week, and 52 weeks a year.

This item is in progress. Expanding both the breadth and depth of IT support at LSU are at the heart of an environment of IT abundance. When combined with the ITS Help Desk and a training facility already in the Fred C. Frey building, the addition of the Middleton Information Commons Help Desk, Print Desk, Faculty Technology Center and Adaptive Technology Center, have all contributed to making IT support highly visible and readily available to faculty, staff, and students in the heart of campus. Hours of operation have been expanded from 7 p.m. weeknights formerly, to 11 p.m. currently. Additional professional and student worker staff have been added to cover Saturday and Sunday daytime hours. New remote desktop software also enables the campus community to receive help directly on their Windows, Macintosh, or Linux workstations. GROK extends professional walk-up, telephone, e-mail, and remote desktop assistance by providing a one-stop shop of 24x7 online answers to the most
commonly asked technology questions. While significant progress has been made on this action item, additional funding is required to expand professional support to 24x7.

ACTION ITEM 3.03 ★
Communications between central and distributed IT staff should be strengthened. ITS should develop programs that provide improved communication and coordination between the key providers of IT support on campus in a leveraged support model.
In 2006, ITS began a new series of events largely aimed at expanding communication and dialogue with and between ITS and campus IT professionals: IT Forums are held three times a year, and focus on showcasing emerging technologies, highlighting new vendor product and service offerings, and providing a venue for highlighting the accomplishments and projects of all campus IT professionals. Periodic “Munch and Share” events address timely IT topics in an informal fashion over lunch. Beginning in 2007, ITS began sponsoring a “Love Your Computer” day for students, in combination with a Tech Fair for faculty and staff. All members of the campus community are invited and encouraged to subscribe to “IT Wire,” a monthly on-line newsletter which provides brief overviews of timely IT topics and alerts about upcoming changes. Several committees, headed by members of the campus IT community, and assisted by ITS staff also serve to enhance communication: these include the Software Committee, the Training Committee, and the Moodle Development Advisory Committee.

ACTION ITEM 3.04★★
ITS, the Center for Academic Success (CAS), and the Centers for Excellence in Learning and Teaching (CELT) should work collaboratively to provide training opportunities for faculty, staff, and students alike.
This action item has been completed. Curriculum and calendars for CELT and ITS were combined in 2007, prior to the CELT/ITS merger. CAS and ITS have been working collaboratively on curriculum development and have officially combined their catalogs of offerings as of December 2008. Discussions currently are underway regarding the possible merger of CAS’s START program, which focuses on IT training for students, formally into the ITS portfolio.

ACTION ITEM 3.05★★
The University must significantly increase the number of IT professionals on campus—both centrally in ITS and distributed within the colleges and departments on campus.
ITS has worked extensively with departments on campus to augment the training of existing IT professionals, advise, recruit, and conduct interviews for new professionals, seek creative ways of combining the hiring efforts of small units, and to assist in the development of both internships and new professional appointments. While Information Technology Services has seen an increase in personnel of 5% since 2006, no data are currently available on the departmental level. Additional funding is required to fully implement this action item.
**ACTION ITEM 3.06**

There should be a mechanism for training and certification of IT staff in the technologies they support.

This item is in progress. Continued training and development of professional IT staff remains both an institutional priority and a priority for ITS. In 2007, ITS worked closely with Louisiana Technical College to offer training leading to Microsoft certifications by promoting a cost-sharing model between ITS and departments to cover the cost of the training. Over 20 individuals participated in this training. The merger of Centers for Excellence in Learning and Teaching (CELT) and ITS training and workshop offerings and increased visibility of these classes have also contributed to both higher awareness and participation in training. In 2008, numerous ITS staff were certified as either Microsoft or Macintosh server administrators. Additional certifications were also received in .NET programming and security. The Visualization Services Center has sponsored workshops with vendors for highly specialized software such as Mathematica and offers free introductions to visualization software, software interfacing, data preparation and data analysis. As technologies continue to evolve, however, it is imperative to increase opportunities for staff to re-tool and re-train, and further investments in on-line training tools should be considered.

**ACTION ITEM 3.07**

ITS Help Desk personnel should have broad understanding of general technical questions, but should also have more developed content expertise in areas identified by community demand (statistical computing, GIS, database management, Web development, and the like).

This item is in progress. The traditional Help Desk model has evolved in the past year to one of a “Service Desk,” a model described in detail by the International Technology Infrastructure Library (ITIL), a framework for managing information technology and widely accepted in private industry, and more recently by higher education. The newer model is one of combining the best of several worlds: a one-stop shop/front-door as the single point of contact for faculty, students, and staff seeking help and information, with a second “tier” of deep content experts whose knowledge and services are tailored to specific disciplines or content areas. As an example, both the Faculty Technology Center and Visualization Services Center staff may be reached with the same phone number and Web form as the ITS Help Desk, but they also provide their own service centers located in Middleton, and provide both walk-up service and appointments for consultations on course management, Web development, wikis, and a variety of visualization software. Via a partnership with the Center for Computation and Technology (CCT), the Faculty Technology Center also provides telephone and on-site assistance on high performance computing. This model has been quite successful to date, and as other areas are identified based on demand, other content area experts and service centers may be added.
**ACTION ITEM 3.08**

Documentation provided by vendors and distributed with open-source software systems should be readily available online and downloadable for use. LSU’s on-line knowledge base (GROK), and on-line software repository (TigerWare) are also the primary portals for vendor documentation. GROK articles, now numbering over 9,000 and updated regularly, often reference vendor documentation and reference materials available on-line, while downloads available from TigerWare frequently contain links to accompanying vendor and open-source documentation. In this manner, reference materials are best kept updated. As both GROK and TigerWare continue to expand, related documentation will increase proportionately.

**ACTION ITEM 3.09**

Documentation should be augmented with locally-produced information relevant to local conditions and institutional rules.

GROK (http://grok.lsu.edu) is LSU’s on-line repository of commonly asked campus technology questions and answers. GROK was implemented in 2006, and now contains over 9,000 articles, frequently updated to ensure relevance and timeliness of information. While some GROK articles are generic in nature (for example, how to convert files from Word 2003 to Word 2007), most articles contain articles specific to LSU, such as how to obtain computing accounts, the use of Moodle at LSU, and how to connect to LSU’s secure wireless network.

**RECOMMENDATION IV**

Develop sound fiscal planning for IT that leverages LSU’s existing investments, increases those investments in creative and innovative ways, and expends funding resources in the most responsible and efficient manner.

**ACTION ITEM 4.01**

The University should build life-cycle replacement funding into its planning at every level of investment in information technology, including both hardware and software for personal, departmental, and central systems. ITS should develop a life-cycle replacement model to use, both for its own resources, and for the broader campus IT resource environment. A funding plan should be developed in support of this model and should be implemented immediately.

ITS has long been interested in life-cycle replacement models, and has traditionally implemented such with Student Technology Fee supported facilities. This logic has now been expanded to the data network, through the creative funding process established with Finance and Administrative Services via the Network 2010 project. ITS builds its internal budgets with an eye toward eventual replacement of key infrastructure on suitable life-cycles (3-5 years depending upon the technology). This methodology will be extended to the broader array of campus computer resources with the eventual
implementation of Action Item 1.01; this is awaiting funding sufficient for a modernization exercise (one-time) and ongoing programs.

**ACTION ITEM 4.02 ★★★**
The University should budget a standard amount per year, per FTE to cover costs for information technology infrastructure and service. These costs should include such components as life-cycle replacement of faculty and staff personal computers, data and voice communication network provision, pervasive-use software licensing, and local IT support.

This is a significant challenge to implement across the entire spectrum of IT at LSU. Funding and budget systems at the University remain largely focused on the academic core, and additional funding requests to the Legislature have not yet borne fruit in this regard. However, progress is being made. A proposal to move the data network from an out-dated port-based cost recovery system to one based upon FTE headcount is being considered by campus administration in 2008-09, and could be deployed as early as fiscal year 2009-10. This model would more accurately account for costs based upon the metric of who uses the service – individuals, rather than on ports activated, which does not account for such new services as wireless data networking. We have challenges ahead to more broadly implement this concept to address personal computers, software licensing, and IT support – but the step to move the data network to this form of budgeting would provide a good prototype from which other forms may develop in the coming 2-3 years.

**ACTION ITEM 4.03 ★**
Cost-savings should be sought through the leveraging of resources, including the creation of campus-wide agreements for standard equipment and software.

LSU is a leader in negotiating and obtaining leveraged pricing on both software and hardware and in making the availability of these offerings visible and accessible to faculty, staff, and students at no or reduced cost. LSU was one of the first universities to negotiate a system wide Microsoft Select agreement, which gives the campus unlimited access to Microsoft operating systems as well as the full MS Office Enterprise suite for both Windows and Macintosh operating systems. Other campus software agreements provide free home and campus licenses for anti-virus, anti-theft, encryption, bibliographic, word processing, and scientific software, and reduced prices on a whole range of programs ranging from statistics (SPSS and SAS) to Web and media production (Adobe CS3, FinalCut) to science software (Mathematica, Gaussian). Additionally, LSU now negotiated reduced student pricing for laptops and desktops from major vendors (Apple, Dell, IBM, Lenovo, Toshiba) and continues to expand both software and hardware offerings on a regular basis.

**ACTION ITEM 4.04 ★★★★**
Funding for high performance computing resources—cycles, storage, visualization, and instruments—in support of research enablement should be more holistically coordinated, and expanded over time. New avenues featuring ITS-sought funding via grants and programs should be encouraged. The University should ultimately provide a guaranteed central funding
strategy for the provision of these resources, possibly out of University indirect budgets.
While such envisioned funding structures do not yet exist for high performance computing, significant progress has been made in attempting to develop reasonable periodic investments in this infrastructure. Since December 2006, the campus – via investments made by ITS and CCT – has seen a three-fold increase in provided computational cycles on campus, and many more times that made available through State investments in the Louisiana Optical Network Initiative (LONI). Use of University indirect budgets remains a challenge, in that these are currently fully consumed to cover other necessary costs. However, in partnership, the Vice Chancellor for Information Technology/Chief Information Officer and the Vice Chancellor for Research and Economic Development continue to explore ways in which sufficient life-cycle funding can be made available to maintain LSU’s advance in this critical area.

**ACTION ITEM 4.05 ⭐**
Where possible given program policies and procedures of the specific funding agency, researchers must include support and life-cycle upgrade costs into grant proposals for equipment.
This action item has yet to be addressed. As this involves research administration policy, the Vice Chancellor for Information Technology/CIO should engage the Vice Chancellor for Research and Economic Development in a preliminary review, before engaging campus in a broader discussion of the issue.

**ACTION ITEM 4.06 ⭐**
When resources are allocated for new equipment, resources for their support should be included in the costs. Grants should include the support costs (personnel) and not just the physical IT components.
While no broad-based policy has been developed yet with regard to grant submissions, increasingly ITS is considering support costs in any new initiative or service launched, so as to capture the complete cost. An example was the 2006 proposal for electronic mail, wherein not just the costs of the hardware infrastructure were analyzed, but the fully-loaded support costs included as well.

**ACTION ITEM 4.07⭐**
Additional options for student-fee based funding—such as an increase of the existing student technology fee or a new student software fee—should be explored with student government.
This item has been explored with the past three Student Governments, both inside the Student Technology Fee Oversight Committee (STFOC) and separately from that entity. At present, the status of the STF is such that increased fees do not yet seem warranted, given the construct of the “Tech Fee Plan” and the existing budget and designated spending articulated by the STFOC. As well, the climate for additional fees on campus is a broader issue for administration – i.e., what is the best use of academic fees and which fees should be advanced in priority order? This item will be explored in the current and coming years as well, so that if the environment becomes favorable, an additional fee could be considered at an appropriate time.
Action Item 4.08

The policy for funding full-time appointed positions from the student technology fee, currently not allowed, should be reviewed with respect to positions within ITS that are categorically devoted solely to support of student use of technology funded by that fee.

This item has also been explored with the past three Student Governments inside the Student Technology Fee Oversight Committee (STFOC) structure. To date, no consensus has formed with regard to this change, due in part to historical concerns about the use of STF for funding staff. It is the case that these concerns about use of STF for appointed staff are broader than just LSU campus perspectives, and as a result a move to this sort of commitment has broader ramifications to be considered – not only by Student Government, but by LSU campus administration. However, as IT becomes more complex and mature at LSU, the level of support services expected by the students is increasing, so there is a growing need for increasing not so much the quantity of support, rather, increasing the quality level of support (which may be better addressed with better educated, better experienced non-student staff). Alternatives to be considered include funding “post-graduate” or intern-type positions (beyond student hourly roles) for graduating LSU students – thus increasing the opportunities for retention of valued “knowledge workers” in the State. This item will continue to be put before Student Government and the STFOC for consideration, so that if concerns can be addressed it may yet be implemented.

Action Item 4.09

Creative funding mechanisms for personnel involved in overcoming the extreme backlog of information systems development projects should be explored and put into place.

This item is in progress. An explorative engagement with a technology staffing firm in the use of contract developers for project requests was conducted in the 2007-2008 fiscal year. The results were generally positive and additional engagements are being considered.

Action Item 4.10

Creative funding approaches to establish and develop IT support personnel in colleges and departments, in line with a leveraged support model suggested in action item 3.01 should be explored and deployed in pilot efforts to prove the effectiveness of the concept and gain acceptance for long term funding consideration.

Recognizing the need to provide training and resources and to expand communication and dialogue with and among campus IT professionals, ITS re-energized and expanded its Departmental Services program in 2006. One of the outcomes of this re-focusing was the introduction of the IT Forums, held three times a year to showcase emerging technologies, introduce new vendor product and service offerings, and provide a venue for highlighting the accomplishments and projects of all campus IT professionals. The Departmental Services program has also worked extensively with colleges to recruit and interview IT professionals and has achieved creative ways of combining professional positions between multiple departments. ITS has also helped departments create internships for several units. Nonetheless a gap still exists in the availability of content-
area support experts and local support for each department or discipline, and further study and funding is required to fully realize this goal.

---

**RECOMMENDATION V**

Secure LSU’s IT infrastructure, safeguard the integrity of LSU’s information resources and the privacy of its user community, and ensure the continuity of LSU’s IT infrastructure and information repositories in the face of possible disaster scenarios.

---

**ACTION ITEM 5.01**

The CIO should complete review of the recently received IT Security Audit, and develop an implementation plan to address points of concern raised by the auditors.

This action item was completed in early 2008. The Office of the Vice Chancellor for Information Technology’s Chief IT Security & Policy Officer led the development of this implementation plan after reviewing the IT Security Audit. The recommendations were provided to the relevant divisions within Information Technology Services, and the Chief IT Security & Policy Officer worked with the Deputy CIO of each respective Division to ensure that the recommendations were addressed. The Divisions periodically provided the Chief IT Security & Policy Officer with status reports on their implementation efforts. Within the IT Security & Policy Office itself, work was done to develop mechanisms to address unauthorized access to the University information technology infrastructure and other computer-related security incidents. A number of technological solutions such as vulnerability management, firewalls, intrusion detection and prevention systems, and proactive systems security scans were considered and implemented to increase the security of both the University information technology infrastructure and the network that connects that infrastructure. In early 2008, a follow-up IT Security Audit was performed and the review team noted that significant progress had been made at the institution since the IT Security Audit conducted in 2005.

---

**ACTION ITEM 5.02**

The University should develop clear and forceful policies to address the integrity (management and protection) of information (data) and the security of IT infrastructure resources on which that information resides.

Through the IT Security & Policy Advisory Committee formed in January of 2006, this action item has been substantially addressed. Official campus policy statements have been drafted or revised and subsequently enacted. PS 06.05/PS-107 (“Computer Users’ Responsibilities”), PS 06.10/PS-114 (“Security of Computing Resources”), PS 06.15 (“Use of Electronic Mail”), and PS 06.20/PS-116 (“Security of Data”) directly address the integrity of data and infrastructure resources. In addition, PS 06.25 (“Privacy of Computing Resources”) was recently approved, further addressing the protection of data at the University.
ACTION ITEM 5.03

Specific programmatic mechanisms are needed to assure IT security and the protection of information privacy.
Information Technology Services has invested in security appliances and services designed to filter inbound and outbound network communications and monitor the “health” of systems operating on the LSU network. The IT Security & Policy Office and the ITS Networking & Infrastructure jointly manage an intrusion detection and prevention system and a firewall to help maintain the security of the University infrastructure and systems. An incident response mechanism is in place for when intrusions and other security incidents do occur. The IT Security & Policy Office communicates with both on-campus entities and larger organizations, such as the REN-ISAC (which LSU supports financially and with personnel), to proactively manage potential security concerns. In addition, departmental contacts may request vulnerability scans from the IT Security & Policy Office, who will then use a suite of software tools to help that department discover potential vulnerabilities on their systems.

ACTION ITEM 5.04

Specific physical mechanisms must be in place to secure servers and access to sensitive information.
Information Technology Services has proactively assessed the physical security of the University’s servers under its control in order to reduce the risk of security incidents on systems containing sensitive information, and ensure that only authorized personnel have access to those systems. The IT Security & Policy Office conducted a physical security assessment of several departments on campus. In addition, the IT Security & Policy Office purchased Proventure’s Asarium, data-analysis software which assists departments in locating sensitive information stored on servers and workstations. The Office also works with individual departments to ensure that their servers are secure, along with the data stored on those systems.

ACTION ITEM 5.05

Data backups should be done to ensure the continuity and the future availability of data of all sorts—administrative, academic, and research.
Information Technology Services has maintained off-site backups of production data for disaster recovery purposes for a considerable amount of time. For critical institutional data, a weekly backup is now shipped to an off-site storage facility in another state. ITS also offers network-based backups of departmental servers, and encourages all departments on campus to take advantage of this service. Departments with exceptionally large quantities of data, such as geospatial datasets, are not a good fit for this offering; they typically address their backup needs on an internal basis.

ACTION ITEM 5.06

A plan should be developed and implemented to effect the removal of the social security number as the primary personal identifier in University information systems.
A plan has been developed and implemented. The LSUID SSN abatement project is winding down into its final phase. The process to remove SSN from all databases where it is non-essential has been completed. The final review of the use of SSN in applications is in progress and will be completed in the first quarter of 2009.
**ACTION ITEM 5.07 ★**
The CIO should convene a Committee on Institutional Data and conduct regular meetings with the goal of defining data administration and access policies for institutional data.

Part of this action item was addressed by the Policy Statements maintained and developed by the IT Security & Policy Advisory Committee formed in January 2006. While no designated Committee on Institutional Data yet exists, a further broadening of the scope of the IT Security & Policy Advisory Committee to better cover these goals is possible. A number of Policy Statements, such as PS 06.20/PS-116 (“Security of Data”) and PS 06.25 (“Privacy of Computing Resources”) have been crafted by this committee and cover topics such as data classification and access policies for institutional data.

**ACTION ITEM 5.08 ★★★**
ITS should complete an IT disaster recovery and business continuity plan with input from the LSU community and support from senior-level management at the University.

This action item has been completed. For the University’s mainframe-based systems, ITS contracted for “hot site” recovery in October 2006, and two annual test events with the “hot site” were successful. With regards to the campus at large, the Chancellor issued a memo dated February 26, 2008, directing all critical IT services and applications to be centrally managed where feasible, and for departments to develop, document, and annually test a Disaster Recovery/Business Continuity Plan when central management is not feasible. Departments were also asked to submit both the plan and the results of testing to the Emergency Operations Center (EOC) to be kept on file.

Full implementation of the plan requires additional funding to be realized, as well as the full deployment of the Louisiana Optical Network Initiative’s statewide fiber network. Information Technology Services has formulated a robust disaster recovery plan for the services that are its direct responsibility. There have been some delays in expanding the plan due to the need for renovation and infrastructure improvements in the environmental space of a north Louisiana facility. However, ITS was recently notified that the environmental space in north Louisiana is ready for use, and reviews of hardware specifications are currently underway.

**ACTION ITEM 5.09 ★**
The IT Policy and Security Officer should establish a Security Advisory Team comprised of a variety of departmental staff from academic and administrative units.

This action item was completed in early 2006. The IT Security & Policy Advisory Committee was created in January of 2006 by the Chief IT Security & Policy Officer. This committee is comprised of members of the E.J. Ourso College of Business, the LSU Library, the Office of the Registrar, the Office of Public Safety, the Office of Finance & Administrative Services, the College of Basic Sciences, the College of Engineering, the Office of the Dean of Students, the Department of Residential Life, and the Manship School of Mass Communication, along with a number of individuals employed by Information Technology Services and other units on campus. The Committee has drafted five new security policies to date, and has processes and procedures in place to
improve existing policies as well as create new policies as required by the changing nature of the IT industry.

RECOMMENDATION VI
Develop robust and plentiful IT resources to enable research at LSU

**ACTION ITEM 6.01★★**
The University should continue to establish and grow an array of high performance computing resources for researcher use, and should seek to maintain a top 100 status for its high performance computing capabilities.

Since 2006, ITS and CCT in partnership have worked to steadily increase the available HPC resources to the campus, both via on-campus provision (Tezpur and Pelican) and via LONI (Queen Bee and Eric and the other distributed clusters). At the time of installation, Tezpur was a Top-100 machine, and Queen Bee was a top 30 resource. As of June 2008, Tezpur had fallen off the Top-100 list, and Queen Bee was holding at position 54. Overtime, as other more powerful machines emerge, LSU’s existing resources will slip. This only reinforces the direction of this action item – to continue to maintain a place in that list. First and foremost, this should be done in order to assure LSU researchers access to the computational resources they need to be leaders in their various HPC-enabled fields. Upgrades to the campus environment will certainly be needed in the 2009-10 timeframe, as will similar moves with LONI resources that year and the year after. A key challenge facing LSU in continuing the advancement of HPC resource power is the availability of a facility to house ever larger, more powerful machines – in terms of power consumption and cooling capacity. As such, the future advancement of this action item is very dependent upon advancement and completion of power and cooling upgrades to Frey, outlined in Action Item 1.04.

**ACTION ITEM 6.02 ★**
ITS and CCT should lead efforts to develop partnerships with campus researchers to build capacities and support research endeavors, focusing on ways to best leverage investments in these key resources.

Included in the 2006 HPC Resources Allocation Policy & Process memo from then-Interim Executive Vice Chancellor and Provost Silverman was a key section on ‘Contributing Investor Allocations.’ This recognized that a key element of HPC is the move toward increased centralization (away from distributed ad-hoc clusters in
individual labs) of resources to the betterment of the overall LSU environment, and the need to encourage resources to contribute investments to the central “pool” by providing a commitment of dedicated allocations. This resulted in the first-ever individual contributions to a major HPC acquisition (Tezpur), which combined with centralized investments by ITS and CCT to increase the overall size of the resource acquired. This should serve as a model for subsequent acquisitions, which would not only continue to provide abundant centralized resources for the campus, but serve the specialized needs of individual researchers in this broader context.

**ACTION ITEM 6.03**

**There should be a reasonable and transparent mechanism in place regarding the allocation and assignment of available computation cycles.**

In July 2006, then-Interim Executive Vice Chancellor and Provost Silverman chartered the High Performance Computing Resources Allocation Committee (HPCRAC). His charge detailed the broad mission of the HPCRAC, established control for allocations into the Office the Vice Chancellor for Research and Economic Development, required the preparation of a formal HPC allocations policy and processes, and detailed a number of other aspects including the opportunity for contributing investor allocations. The results of this effort are captured on the Accounts page for HPC on the Web at: [http://www.hpc.lsu.edu/accounts/](http://www.hpc.lsu.edu/accounts/)

**ACTION ITEM 6.04**

**Recognizing that the national cyberinfrastructure offers a broad and expansive array of high performance computing resources via its national centers, ITS and CCT should work to expand communication with the campus research community to facilitate its use of these external resources and national centers.**

Louisiana State University is a member of two large grid computing consortiums: SURAgrid (Southeastern Universities Research Association) and Teragrid. LSU contributes part of its Pelican resources to SURAgrid, and in exchange, LSU researchers may receive allocations on SURAgrid resources. The Teragrid is composed of nine sites, including LONI (Louisiana Optical Network Initiative), connecting supercomputers at Louisiana's major research universities, as well as computational, networking, and storage resources throughout the United States. Through its membership in LONI, LSU researchers have access not only to the Teragrid’s high performance computing tools, but access to “humanware” support to facilitate access and use of those tools. Consultants at the Faculty Technology Center are also available to assist with creating accounts, applying for compute cycle allocations, and understanding how to package and run jobs on both SURAgrid and the Teragrid.

**ACTION ITEM 6.05**

**The University should encourage use of high performance computing beyond traditional user groups and do so by establishing and growing support for use of this technology for social sciences, arts, and humanities.**

Efforts to date have largely been about providing sufficient resources and support to meet the pent-up demand that existed pre-2006 from the current set of users. As the infrastructure and service suite has grown and evolved, it is better positioned to begin to expand the use of HPC beyond traditional user groups in the coming years. While
the HPC research enablement function has been centered at the CCT (as of March 2007), both ITS and CCT (and their respective directors and Vice Chancellors) are committed to enabling progress on this action item in the coming 1-2 years ahead.

**ACTION ITEM 6.06 ★★★**
Specialized centers to support the use of specific information technologies (e.g., visualization, GIS, mathematical and statistical computing) by researchers should be established in a coordinated fashion within the University. ITS should look for ways to establish several of these as part of a leveraged support model, providing deeper support for the more common of these specialized information technologies.

The Faculty Technology Center and Visualization Services Center, which both opened in September 2008 in Middleton, serve to augment and focus academic and research computing resources available to faculty and students. In addition to both individualized and group instruction and consultations for scientific visualization, consultants at the FTC provide assistance with a wide range of statistical and high performance computing applications. Additional outreach activities and events are planned to help guide both the form and content of specific technology consultations and services to be made available at the FTC, or remotely through other collaborations on campus.

**ACTION ITEM 6.07 ★★★**
Advanced research software and applications should be made available to researchers, taking advantage of all means of licensing and forms of distribution and access.

Information Technology Services (ITS) and LSU’s Center for Computation & Technology (CCT) have joined forces to create a central gateway to the high performance computing resources and human expertise of LSU (http://www.hpc.lsu.edu). Through this site, faculty researchers can view the systems and services available to perform their research, open accounts for access to these computational resources, and obtain the customer service and support that they need to successfully and smoothly carry out their projects. By combining efforts, the CCT-ITS collaboration, coupled with statewide projects like LONI, further positions Louisiana as a national leader, not only in deploying the most progressive high-tech infrastructure, but also in advancing it for scientific, engineering, arts, and business applications.

**ACTION ITEM 6.08★**
The University should provide robust communication and document sharing tools to facilitate local and international research collaboration.

In 2006, LSU implemented FilesToGeaux, a simple file-sharing utility that allows researchers to upload and share files (in particular very large files) for up to 90 days. Although other document sharing services exist in the “cloud,” e.g., Google Docs, LSU also purchased Xythos, which it has implemented under the name TigerBytes II. TigerBytes II provides secure, self-administered collaborative file sharing and document management. Through both FilesToGeaux and TigerBytes II, researchers can securely
collaborate locally and internationally. As more cloud and commercial tools become available, LSU will continue to add open-source collaboration tools to TigerWare, and provide assistance with free SOS tools via the Faculty Technology Center and the Help Desk.

**ACTION ITEM 6.09 ★★★**
Online tools and training opportunities on common research IT tools should be available and coordinated centrally by ITS.

HPC @ LSU offers High Performance Computing training to LSU and LONI users. Introductory courses are offered on MPI, OpenMP and other true parallel programming topics. Many of the workshops and training courses are held on the Access Grid so that remote sites may attend. Tutorial topics taught both on campus, as well as through the Access Grid include introductory and intermediate Linux, LaTex, CVS, subversioning, MPI, OpenMP and others.

**ACTION ITEM 6.10 ★**
IT workshops and seminars should be offered on emerging technologies and their use in research.

LSU’s Center for Computation & Technology (CCT) features multiple lecture series related to emerging technologies in research. These include the Frontiers of Scientific Computing Series, Computational Mathematics Seminars, Computing in the Arts & Digital Media Series, and numerous discipline specific series, including Visions for Quantitative Biology. Digital videos are produced for many of these lectures and made available on the CCT Web site. In addition, ITS is currently developing multi-modal delivery mechanisms (in-class instruction, text, streaming video) for production of podcasts, video, wikis and other Web 2.0 technologies that could be used for teaching of research-related topics.

**ACTION ITEM 6.11 ★★**
There should be coordination of multiple IT “islands” that result from multiple grants and discipline specific IT needs.

As mentioned in Action Item 6.02 individual and central resources were combined to acquire Tezpur, which made possible increased computational capacity for this resource. This model should be promoted and emulated to achieve higher availability of computing resources, reduce expenses related to maintenance, life-cycle, space and energy consumption, and reduce and simply resources needed for on-going support and training.
RECOMMENDATION VII
Develop robust and plentiful IT resources to enable faculty teaching and student learning at LSU.

**ACTION ITEM 7.01**
The University must provide a single course management system that responds to the changing needs of the University.
This action item has been completed. A committee of faculty, students and staff conducted a year-long review of various course management systems, and selected Moodle, an open source, community supported course management system. A committee of LSU faculty and students guide the development of Moodle’s adaptation to LSU’s needs.

**ACTION ITEM 7.02**
A discipline-specific laptop program should be mandated for students. To support this, ITS should provide recommendations for configurations, arrange special vendor deals for students, and communicate these programs in the most effective manner.
This action item was closely examined by the FITS Teaching and Learning Implementation Task Force and discussed in detail with involvement of both students and instructional faculty, and student enrollment administrators. Given the advance of individual ownership of laptops – spurred on by the growing presence of a rich, wireless network on campus (that resulted from implementation of FITS action item 1.09 as part of the Network 2010 project) – it was felt that mandated ownership would not be necessary within the FITS timeframe (into 2011); students are already making the decision to acquire laptops/mobile devices. The Task Force weighed the value of a requirement with respect to financial aid opportunities against the perceived additional financial barrier to attendance, and given market forces described, ultimately decided that this item should not be implemented. It was determined that ITS should continue to make technology available and to secure and publicize vendor deals to students, and this has been accomplished via TigerWare.

**ACTION ITEM 7.03**
Online tools to support the advising and timely progress of students through their academic programs must be in place and easy to use.
Since the FITS was published, Provost Astrid Merget established a workgroup comprised of various Vice Provosts, the Deans of the College of Basic Sciences, Arts & Sciences, University College, the Manship School of Mass Communication as well as other faculty and administrators to recommend enhancements to University advising
policies and procedures. Among several recommendations, the committee proposed development and implementation of a Comprehensive Academic Tracking System (CATS).

CATS is designed to help keep students on track to get their undergraduate degrees in four years by monitoring a student’s academic progress in meeting critical requirements. The first phase of the CATS was piloted in Fall 2008 with freshman majoring in biochemistry, political science, finance, and mass communication. In Fall 2009, additional senior colleges will be given the opportunity to participate in the CATS initiative.

ACTION ITEM 7.04 ★
Policies should be developed so that instructors may discourage inappropriate use of wireless and other information technologies within the classroom.
This action item has been completed. It was determined by the FITS Implementation Task Force that instructors already possessed the ability to guide the use of IT in their classroom through existing classroom management policies (PS#29), and that a simple inclusion of instructor expectations for technology could be incorporated into syllabi as deemed necessary by individual faculty members.

ACTION ITEM 7.05 ★
The creation and dissemination of electronic texts for classes should be facilitated
This action item has not yet been addressed. While textbook suppliers and publishers do provide electronic versions of some of their textbooks, the utilization of e-books over hardcopies has not become the norm. The Digital Media Copyright Act prohibits the unauthorized creation and dissemination of copyrighted materials by professors and students outside of the publishing industry.

ACTION ITEM 7.06 ★
Computer-based testing should be user-friendly and developed in such a way that the student's comprehension of material, not his or her technical capabilities, is assessed.
The Office for Assessment and Evaluation supports faculty, administrators, and institutional committees in the development and implementation of both quantitative and qualitative methodologies for the assessment of student learning in courses, curricula, and special learning initiatives. In particular the OAE provides the administration and reporting of secure computer-based classroom testing and for electronic test scoring using scan technology; administers advanced-standing examinations such as Praxis, TOEFL, Praxis, and GRE, reports placement and credit results to appropriate institutional units; and consults with research faculty on the design and analysis of survey instruments for project assessment and evaluation. In the past three years over 450 computers have been installed in the Himes Hall Assessment and Evaluation facility to provide outstanding access to proctored exams. Additionally, Faculty Technology Center instructional consultants assist with the development of computer-based testing via LSU's course management system, Moodle.
ACTION ITEM 7.07 ★★★

A standard, highly-capable level of support services should be developed to help engage faculty in their efforts to incorporate information technology into their teaching. Beyond the technology itself, dedicated resources to foster an institutional climate of instructional innovation and teaching excellence are needed. The role of the Center for Faculty Development (CFD) within the Centers for Excellence in Learning and Teaching (CELT) should therefore be focused and enhanced.

The vision for faculty engagement and dedicated faculty resources has been partially achieved with the establishment of the Faculty Technology Center and Visualization Services Center in Middleton, and by the addition of several professional staff positions devoted to instructional design, course management, media development, scientific visualization and technologies that facilitate and enrich the learning process. The Faculty Technology Center and Visualization Services Center combine to form the nexus of a new focus on incorporating a wide variety of technology into teaching and learning via one-on-one consultation, assistance with course development outlines, tools, and artifacts, and through group instruction. Continued funding for this action item will augment resources in these centers and promote expansion to the establishment of further discipline-related technology centers.

RECOMMENDATION VIII

Develop sound information systems featuring a rich set of applications and tools that address the increasing need for more effective and efficient institutional processes and provide for advanced academic analytics at LSU.

INFOSYS 2010

Two years ago, with the endorsement of the FITS task force on information systems and the support of the CFO, LSU undertook an ambitious effort to modernize its information systems infrastructure. InfoSys 2010 is designed to upgrade the information systems infrastructure to allow it to support newer, more modern and modular information systems. The InfoSys 2010 initiative recognizes that access to the right information at the right time improves performance and decision making, that there is a need to sustain mission critical services while transforming the current systems environment so as to empower the University to move forward strategically. When it comes to information systems, the goal is to be fast and good.

InfosSys2010 comprises four operational initiatives including (a) an enterprise server upgrade, (b) a portal and identity management system upgrade, (c) implementation of technology that supports academic analytics and (b) implementation of 21st century tools that will facilitate the integration, implementation and development of modern systems. The first of these four initiatives is mostly complete. The remaining three are ‘in progress’ to a greater or lesser extent and will be referenced in items throughout this status report, particularly in the items below.
**ACTION ITEM 8.01**

The current backlog in information systems requests should be reduced to the point where no such request sits in queue for more than 12 months. Efforts should be made to increase the level of staffing in the University Information Systems (UIS) division of ITS—at least for a limited amount of time—to reduce this backlog.

With funding from the InfoSys 2010 initiative, UIS has increased the number of IT professionals in the unit.

Alternatives for providing sufficient resources through staff augmentation have also been considered. For example, staff augmentation in the form of bringing in consultants to contribute to high priority projects has been piloted (HR system). And, augmentation in the form of using specialized service firms to implement modifications that require highly technical, highly specific skills has been tested (Z/OS modifications.)

Alternatives for augmenting the current systems environment with tools that provide agility and give the University flexibility to more quickly fill gaps in existing operation systems and with tools that facilitate the delivery of critical reports are also being considered. For example, the University is currently piloting MetaStorm, a business process modeling (BPM) solution intended to allow more rapid automation of administrative processes. MetaStorm will be one of the components of an enterprise service architecture (‘donut’) designed to facilitate the development of more loosely coupled systems. The University has also acquired enhanced Web-based reporting software to improve reporting as well as the distribution of reports.

**ACTION ITEM 8.02**

The Office of the CIO should establish an effective mechanism for overall prioritization, coordination, and oversight of planning for the development and life-cycle replacement of University information systems in accordance with the University’s overall strategic plans and goals. Opening the lines of communication with the user community at large will facilitate understanding of competing needs, collaborative projects, and user-driven changes and applications.

Two advisory committees have been established to facilitate prioritization and coordination of information systems projects. The Information Systems Priorities and Allocations Committee (ISPAC), co-chaired by Vice Chancellors Baudin and Voss, and the Moodle Development Advisory Committee (MDAC), comprised of faculty and a student representative.

The ISPAC has largely focused on the implementation of major information systems initiatives such as the eradication of SSN, modernization of the Human Resources System, implementation of the Comprehensive Academic Tracking System (CATS) and implementation of InfoSys2010. As a result, individual backlogs have not been specifically addressed.

The MDAC examines and categorizes requests for improvements and enhancements to Moodle. The committee prioritizes requests submitted by the University community.
according to a set of guidelines that include the number of affected users, type of users (faculty, undergraduate students, graduate students) and overall need/effect. This categorization and prioritization dictates the allocation of LSU developmental resources dedicated to the Moodle project. The implementation of Moodle set a precedent for considering the life cycle needs of system implementation in that two developers were allocated to maintain/enhance this system on a regular basis.

**ACTION ITEM 8.03 ★**

A more formal information systems liaison function should be put in place to manage the relationship between ITS and units within the organizations of each of the Vice Chancellors and the Colleges.

Systems liaison functions have been established in the areas of Finance and Administrative Services, Student Enrollment Management and Student Life. In Finance and Administrative Services, the liaison function comprises the Office of Financial Systems Services. In the Student Enrollment Management area, a student enrollment data group meets once a month to discuss ongoing projects and emerging issues. In Student Life, a member of the Vice Chancellor's staff was appointed to serve as the primary liaison between Student Life and UIS.

**ACTION ITEM 8.04 ★**

ITS, through the UIS Division, should develop information systems that (1) encourage research and scholarly productivity and (2) foster quality and competitiveness in graduate and undergraduate students. Further, UIS should continue to develop and/or implement systems that foster the efficient and effective day-to-day operation of the University.

The following projects have been implemented in either production or pilot mode:

- Human Resources Additional Compensation - a distributed Web-enabled application that utilizes attachments, routing/approval/workflow components in an effort to facilitate more efficient payment request processing.

- Procurement Card - a distributed Web-enabled application that utilizes attachments and routing/approval/workflow components in an effort to facilitate more timely expenditure processing.

- PeopleAdmin applicant management service - a third party service for managing position applications and applicants.

- Royall Undergraduate Admission Fast Path - a third party service providing an enhanced and expedient application process for highly qualified students applying for undergraduate admission.

- Enhanced Degree Audit - a new graphical interface developed to enhance the degree audit application.

- Scholarship Award and Tracking system - an informational system developed to improve recruiting of top students, to more efficiently leverage scholarship dollars, and to facilitate the award process.
Percussion Web Content Management System - UIS is in the process of implementing a new Web Content Management System. This system will allow the University to deliver Web sites at a faster pace and will deliver the type of functionality that today's customer's demand, including the re-use of content (for example, news feeds) across University sites.

**ACTION ITEM 8.05**

UIS should develop a consolidated information delivery environment, leveraging technologies and data environments already in use and expanding these with deployment of newer reporting tools and infrastructure. Further, UIS should implement an enterprise-wide data warehouse environment to support academic analytics. Planning and implementation should be inclusive of interested parties and should consider new and evolving approaches. Projects initiated to extend the value of University data and information systems include:

- FilesToGeaux - is a file store service that facilitates the sharing and distribution of files in a secure manner
- Xythos - implemented by USS, this software is a file content management system that is currently being explored as a replacement technology for TigerBytes and by the graduate school for use in distributing graduate applications and documents,
- MetaStorm - is a business process software engine intended to allow the more rapid automation of administrative processes.
- SASWeb - the implementation of this software is in progress to address reporting and the distribution of reports.

**ACTION ITEM 8.06**

UIS should incorporate user-centered design techniques in major systems development projects. A common interface environment will support the efficient and effective accomplishment of the day-to-day administrative tasks of the University. The current model for ensuring a common interface environment is delivery through the University PAWS portal with a consistent look-and-feel. Applications recently developed and currently under development continue to conform to this model (for example, Procurement Card and the re-engineering of the Human Resource system). Additionally, one set of credentials is used to authenticate with University systems.

Efforts to automate business process workflow, resulting in the PAWS Workspace and beginning with the Sponsored Program System, are being incorporated into new systems development, including the Procurement, Procurement Card, and Human Resource systems.
A new University portal has been identified that will facilitate the integration of new systems into a common framework and make possible user interface functionality embraced by the Web 2.0 generation.

Also, the new Web Content Management System will encourage a common Web framework while giving customers more control over the design and content of their sites than that currently offered by the Studio Web system.

ACTION ITEM 8.07 ★
New, more capable application and systems development and delivery environments should be evolved with a focus on accounting for and managing the technology life cycle process.
Java development - a strong move towards the adoption of Java and Java-based tools for administrative applications is underway. This includes adoption of open source frameworks as well as creating Web Services to enable existing and new services to be accessible across various platforms and programming languages.
Server virtualization - the adoption of the VMware server virtualization software has improved the utilization, administration, and disaster preparedness and recovery of the physical computer server resources used for administrative systems.

ACTION ITEM 8.08 ★★
ITS must carefully balance the value of self-developed systems (a build approach) with a model that leverages the market of available, off-the-shelf systems (a buy approach). Neither approach should be exclusive in ITS strategy for delivery of information systems needed by the University.
The Moodle LMS is an open source system (borrow approach) that allows the University to leverage developments contributed by the global Moodle community, as well as allowing the University to customize features to the specifications of the Moodle Development Advisory Committee (MDAC), which has faculty, staff, and student representation.
Hosting of the Moodle LMS has been outsourced to MoodleRooms, saving the University the initial investment cost associated with hosting such a system locally.
PeopleAdmin is a turnkey system entirely developed and hosted by PeopleAdmin.
A new, commercial off-the-shelf (COTS) Web Content Management System is in the process of being implemented to replace the home-grown Studio Web system.

ACTION ITEM 8.09 ★★★
ITS should implement a tiered storage architecture for storage of the University's institutional data, and integrate this technology with database management systems to support image, sound, and video data types.
ITS has taken several steps to position its storage infrastructure for implementation of a tiered storage architecture. Life cycle online and offline storage upgrades were done in such a manner as to split specialized mainframe storage from more common standards based storage. The large space requirements of the non-mainframe systems are being met with better performing and lower cost storage.
In addition, nearline storage, or storage that is closer in a network sense to the servers using it, has been implemented in two ways. First, a small NAS (Network Addressable Storage) array was purchased as an entry into shared nearline storage. ITS and the Office of the University Registrar are using this storage for functions with lower performance requirements. Secondly, a disk only backup server with a large quantity of storage has been purchased to provide higher performance for critical systems and also serve as a model for a pilot of a tiered backup infrastructure.

**ACTION ITEM 8.10 ★**

ITS should explore and then deploy a service architecture that increases fault tolerance in the access of information systems and utilities, without destroying the service levels achieved via the PAWS portal.

The MetaStorm business process engine currently being explored exploits Web services. The salient work of this project involves research into the development of Web services for administrative applications. Also a Zeus load balancer has been tested as an alternative to the propriety homegrown load balancing application. Pilot results were positive.

**RECOMMENDATION IX**

Support LSU student use of IT, not only as a tool in their learning, but to enrich their life experiences at LSU.

**ACTION ITEM 9.01 ★**

Training for students in technology should include highly sophisticated programs and access to appropriate equipment.

The START program, historically managed under the auspices of the Center for Academic Success, is a national leader in extending both group instruction and individual software tutoring to students via peer mentoring. The START program regularly schedules workshops on a wide range of both basic and sophisticated software programs and operating systems including the MS Office Suite, Adobe CS3 products, Flash, iMovie, iDVD, Garageband, XHTML, Web design, and Linux. In January, 2009 START programs will be gradually transitioned to ITS, which will allow these courses to be combined with the catalog of courses already offered by ITS (and formerly, CELT).

A further benefit of this amalgamation is that it allows greater flexibility in the locations (e.g., the Information Commons) and times (nights and weekends) that the courses will be offered.

**ACTION ITEM 9.02 ★**

LSU should develop a program of incentives to increase student ownership of computers, including some combination of direct financial assistance, negotiation of institutional discounts for student purchases, on campus sales and support, and maximum communication with prospective students about options for computer ownership.

In 2006, LSU began working extensively with vendors to negotiate lower prices for student laptops, desktop, and student “bundles.” Currently, LSU is a national leader in having developed student deals with major vendors including Apple, Dell, IBM, Lenovo,
Toshiba. Student pricing, advertised via publications and the annual Orientation CD given to incoming students, is available via TigerWare.

**ACTION ITEM 9.03 ★**

LSU must recognize that IT plays a role in the student life experience beyond pedagogical aspects. ITS should continue to work closely with students to evaluate new technologies and IT-based services that could be adopted to improve not only the academic aspects of technology, but recreational ones that support the overall student life experience at LSU.

LSU occupies a unique place amongst higher education in the vigor and viability of its student governance, and the co-engagement of both students and ITS professionals via a variety of both informal and formal boards including the Student Tech Fee Oversight Committee, the LSU Student Union Board, and Student Activities Board. Through these groups, students and the campus have worked collaboratively to partially fund the campus wireless mesh, the Gear-to-Geaux program, and Ruckus. Additionally, students are invited to participate in “Love Your Computer” day, during which students can learn how to troubleshoot their laptop, take 30-minute workshops on a variety of topics, and sample cool tools and gadgets from major vendors. ITS has worked extensively with students to provide connectivity, support and documentation for game consoles in campus residences. ITS also sponsors a Facebook account and comment wall for students.

**ACTION ITEM 9.04 ★**

The University should provide a top quality, IT enabled, living and learning environment—ubiquitous wireless, network capabilities, and support for residence halls, Greek housing, and campus common areas. The IT enabled environment should be consistent across living and campus spaces; ITS should be charged with working to establish a seamless IT environment across all parts of the campus.

There is currently a project underway to install wireless in the residence halls and surrounding area. ITS has provided the Greek community (via the Student Government) with information on how to obtain wireless from either AT&T or Cox Communications. Because the Greek houses are considered private residences and not part of the LSU cable plant/network, installing LSU network services in the Greek houses is deemed not possible at this time. Additionally, if the Greek community installs non-LSU wireless they will not be subject to the LSU policies regarding authentication and encryption.
RECOMMENDATION X
Develop IT advisory and communication channels to ensure the continued involvement of the LSU community in the implementation of the Flagship IT Strategy and ongoing day-to-day provision of IT services to the campus

ACTION ITEM 10.01★
The campus community must be involved—as a full-fledged partner with both authority and responsibilities—in the development and implementation of IT strategies and service directions taken at LSU. Essentially, the Flagship IT Strategy planning process must evolve a long-term role for the task forces, to facilitate ongoing input from the community, as well as a venue to help communicate IT directions more broadly on campus.
The FITS Task Forces have served well in this role of “IT Governance” through the preparation of the FITS and initial implementation planning activities. The campus community has been a full-fledged partner in the development of IT strategies, as well as operational policies, processes, provision of infrastructure and services made available by ITS. However, 2009 should be a year in which a more formal, structured IT governance model emerges. Such a new model will include key roles for faculty and IT support staff, as well as administration (Deans and Directors). Students have long played a key role via the Student Technology Fee Oversight Committee, but their expanded involvement in the broader spectrum of IT strategies must be secured. A new governance model will be drafted by the Vice Chancellor for IT & CIO, and discussed with the President of the Faculty Senate, President of the Staff Senate, Student Government, and constituent groups made up of IT support personnel in colleges and campus departments; this will occur in the first quarter of 2009 with a goal to implement a new structure to succeed the FITS Task Forces by July 1, 2009. One of their first tasks will be to undertake a “midterm” assessment of the FITS to ensure three years in that items are progressing, and that the document still stands as a comprehensive representation of strategic IT needs.

ACTION ITEM 10.02★
The Office of the CIO and ITS should play a critical role in sharing specialized IT knowledge across the campus. As the central component in a coordinated University-wide IT service environment, ITS must ensure that there is an IT-focused Web presence that provides for the University a pathway for communicating the broad set of IT infrastructure and services described in this Plan. Thus, ITS and the Office of the CIO should develop a central LSU-IT Web site that fulfills the broadest possible mechanism for discovering facets of IT at LSU.
This action has yet to be addressed. While new IT Web resources like GROK and TigerWare do function as important, centralized and coordinated services, a singular, comprehensive IT Web site has yet to be established. Progress toward the completion of this FITS item is expected to be enabled through the implementation of the new WCMS in the coming year. The WCMS will provide the needed infrastructure for such a site.
The funding of a person to provide, update, and coordinate content for the site should be considered.

**ACTION ITEM 10.03**

ITS should initiate a program of activity base costing for IT services it provides, so as to illustrate for the community the relative cost of its various services. This effort should be coupled with a user satisfaction survey, so that cost and quality of service (in terms of user value) can be illustrated.

The ITS finance office staff have an effort underway to deploy activity based costing methodology across all ITS services. This project began in fall 2008 with target implementation set for January 2009. Shortly thereafter, fiscal year 2007-2008 expense data will be made available for user viewing. Current fiscal year expense data will immediately be converted to the new costing method as well. The next phase of the project, commencing spring 2009, will be the crafting of a user satisfaction survey across the same suite of services. The synthesis of the results of these two exercises will yield useful information for better management decision making.