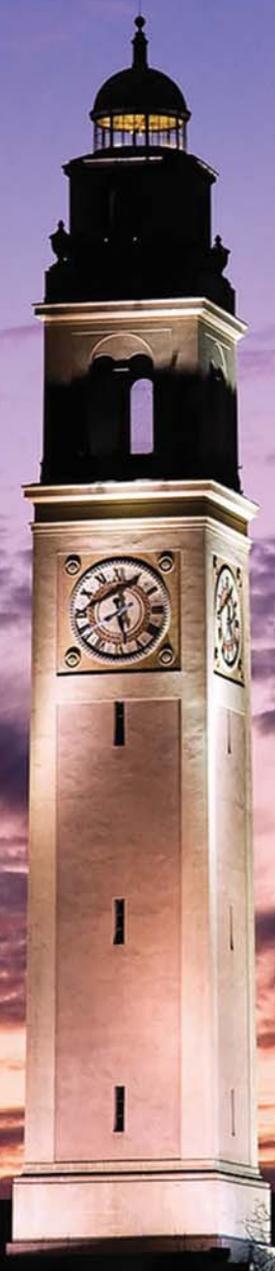


FLAGSHIP IT STRATEGY:

SUPPORTING LSU'S ADVANCE TO NATIONAL PROMINENCE

LOUISIANA STATE UNIVERSITY'S
INFORMATION TECHNOLOGY STRATEGIC PLAN

UPDATED FEBRUARY 2011



The Flagship IT Strategy

An Update to

Louisiana State University's

Information Technology Strategic Plan

January 2011

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LETTER FROM THE CHAIRS

Vice Chancellor Voss:

As the Chairs of the three information technology (IT) Governance Councils, we are pleased to have completed the review of the Flagship Information Technology Strategy (FITS 2006). Our respective Councils discussed all of the original FITS action items. In large part, the FITS has stood the test of time rather well; the document's vision and structure remain relevant. That said, several updates are included as are the addition of new items reflecting changes in the IT environment and technology over the five years since the FITS was crafted. We are pleased to present the revised Flagship Information Strategy (FITS 2011) to you to guide the next phase of development of LSU's information technology environment.

As the Councils reflected on the relevance and progress of the action items over the last five years, all three chairs noted that there has been significant progress achieving the goals despite the constraints of the substantial budget reductions for nearly half that period. The Councils recommended the continuation of implementation of several action items (AI) that while completed in the sense of the original intent of the FITS, must be sustained through ongoing attention and effort. These AIs include the continuation of: (1) broad-based campus software licensing and incorporation of open-system software, (2) IT support for faculty in teaching, multimedia classrooms, and off campus access to University resources, (3) a robust and flexible network, and (4) sufficient storage and network capacity. We must remain vigilant in sustaining the accomplishments we've worked hard to achieve since 2005. The Councils also noted that a few significant action items from the FITS (2006) remain on the to-do list. These are: (1) lifecycle replacement/funding, (2) tiered storage architecture and (3) support; all are as important now as they were five years ago, perhaps even more so as the IT environment has advanced.

The Councils would like to emphasize that FITS 10.01 called for the continued involvement of the campus community in IT planning efforts going forward. Important achievements have been realized for this action item, as is evidenced by the creation and adoption of a formal IT Governance Council structure that was approved by the LSU Faculty Senate in mid-2010. It is as part of this very governance process that we have conducted this review and that we present the updated FITS. However, our involvement should not end with this document, but must continue to evolve in order to establish a formal partnership between IT and the stakeholders as is called for in both FITS documents. The review of the FITS was only our first action in sustaining the community involvement and leadership in IT planning and delivery.

Involvement of the campus community is ever more important, as FITS (2011) calls for *significant changes* in the enterprise information systems that will require community

engagement and continued involvement of the IT Governance Council in order to be successful. The most far reaching of these changes is outlined under Recommendation VIII and calls for the transition of university information systems from our home-grown legacy systems to a more sustainable, modern, enterprise system or set of systems. This recommendation requires the buy-in and involvement from the entirety of campus stakeholders because it is more than an IT or administrative issue. It is a comprehensive change which will impact the way in which students, faculty, and staff carry out the day-to-day operations (teaching, research, service, administration, etc.) of the institution. As a result, the community must be involved in this process. The most efficient and productive method is through the vehicle of IT governance and the Councils.

We look forward to working with you and the rest of the IT community. Together, we will facilitate the implementation of the FITS (2011) and move the University forward.

Andrew Christie
Barbara Dutrow
Larry Rouse

LETTER FROM THE VICE CHANCELLOR & CIO

Dear Colleagues:

I would like to thank you as Chairs – and the members of the IT Governance Councils – for the investment in time and energy made in reviewing LSU's information technology strategic plan. I, too, believe that the FITS has served LSU well these past five years, and that it broadly remains a relevant and useful document as we face the next five years and beyond. The work of the Councils in updating and embellishing the solid framework ensures we've made the proper 'mid-course' corrections at this critical juncture in the development of the information technology environment at LSU.

I concur with the observations made about significant action items from FITS (2006) remaining to be addressed. It has surely been the case that the budgetary challenges that have faced LSU since late 2008 have slowed our momentum in achieving greater success. But I am confident we will be able to make progress in the future; I believe the institution's financial situation will stabilize and perhaps even improve, but I also have confidence in our ability to find evermore prudent means of delivering IT abundance. Technology and the larger environment are offering us more opportunities, today, to deliver IT enablement with reduced costs in some areas, providing us an opportunity to invest savings in new initiatives. Once we no longer must use those savings to offset budget cuts, we will truly see increased speed in achieving the successful implementation of the community's vision.

I welcome your emphasis on the continued involvement of the campus community in IT planning efforts. The IT Governance structure was meant to provide a means for sustained involvement of the community – particularly faculty – in the advance of IT services and infrastructure. It will be even more critical that the community engage in these processes in the years ahead, as both the pace and level of change likely to occur will accelerate. The Truman quote from FITS (2006) remains relevant today: *We shall never be able to remove suspicion and fear as potential causes of conflict until communication is permitted to flow, free and open, across boundaries.* The existence of the Councils and their regular involvement in the process of IT change and advancement is crucial to our overall success in sustaining the powerful partnership forged between IT providers and consumers since 2005. We will be calling upon you as Chairs and all Council members regularly as we implement the actions in the updated FITS.

On behalf of all in ITS, thank you again for your contributions and interest, and we look forward to working with the community in implementing FITS (2011).

Brian D. Voss
Vice Chancellor for Information Technology & CIO

INTRODUCTION

The Flagship Information Technology Strategy (FITS) 2011 serves as an update to the original FITS published in 2006. FITS (2011) builds on FITS (2006) without replacing it; it is LSU's *continuing* strategy for the next five years of advancing information technology enablement. As such, FITS (2011) maintains the original ten recommendations focusing on infrastructure, accessibility, support, funding, security and business continuity, teaching and learning, research, information systems, the student experience, and communications and governance.

FITS (2006) was created through a broad community effort coordinated in ad hoc task forces coordinated jointly by the (then) Office of the Chief Information Officer and interested and engaged campus faculty. The resulting IT strategy for LSU was widely accepted and broadly endorsed by formal governance structures – Faculty, Student, and Staff Senates individually. FITS (2011) is a faculty-led review and update to the previous work under the auspices of the IT Governance structure set into place (FITS Action Item 10.01) through collaboration between the Office of the Vice Chancellor for Information Technology and the LSU Faculty Senate. As such, FITS (2011) continues to reflect the needs of the University from the perspective of the community rather than the IT organization in isolation.

The IT environment has changed considerably during the last five years and FITS (2011) reflects those changes. (*As an example, FITS (2006) did not take into account the growing need for alternative course delivery methods and course content capture.*) FITS (2006) has served the University well and significant progress in creating an environment of *IT Abundance* at LSU has been made in the intervening years; many of the action items that initially were *to be developed* are now *to be continued*. Yet, the 84 action items in FITS (2006) have not all been completed or addressed by the end of 2010; challenges with funding during the last three years have certainly inhibited progress on several items. Thus it is appropriate after five years to take stock of where LSU is regarding its IT environment and make needed adjustments as we continue to progress.

Beyond the original, FITS (2011) provides for the continuation of FITS services and infrastructure that were established and enhanced during the last five years as well as for a number of new items resulting from changing conditions and technologies. FITS (2011) calls for a few new services for the campus and makes some significant changes to the enterprise information systems strategies for the University. Some new action items featured in FITS (2011) are listed below.

- Action Item 4.05: The University should restructure the Student Technology Fee's oversight so that investments can be part of a long-term strategy.

- Action Item 5.01: ITS should establish a standard schedule for external audit of the University's IT security infrastructure, policies and practices.
- Action Item 7.07: The Faculty Technology Center (FTC) should have a satellite location (e.g., Patrick Taylor Hall or other location) so that faculty have improved opportunity to avail themselves of FTC services unhindered by distance.
- Action Item 7.08: The University should establish and support robust mechanisms for developing distance education, course content capture infrastructure, and mobile computing.
- Action Item 8.01: The University must work to replace its mission-critical enterprise systems and move toward an ERP solution. The University should conduct a needs assessment and gap analysis as well as establish a timetable for the migration.
- Action Item 8.08: ITS should leverage available off-the-shelf systems including open source and vended systems.

SUPPORTING THE FLAGSHIP AGENDA 2020

FITS (2011) complements the new Flagship Agenda 2020 just as the first FITS was a companion document to the original Flagship Agenda 2010. FITS (2011) provides the IT infrastructure and services necessary for LSU to reach the goals set forth by the Flagship Agenda 2020:

FITS (2011) enables discovery. IT provisioned through FITS (2011) provides the conduit for research and creative activities. FITS (2011) will ensure that faculty have the advanced infrastructure (1.04-1.08; 4.01), software (2.01), equipment (1.01; 1.15; 4.01) and accessibility (1.08; 2.04) that they need to work effectively. Faculty will also need adequate storage and collaboration tools so as to make advances in research and discovery (1.06; 2.09; 6.03). IT support and training to further enable research is provided via improved access to IT, support for its use, and better funding strategies (2.07; 3.01-3.05; 4.03; 6.01; 7.07). Furthermore, administrative systems must be in place to facilitate the grants process and assist in the tracking of research assets (8.05).

FITS (2011) facilitates learning. IT enhances the faculty-led and student-centered learning environment that develops engaged citizens and enlightened leaders. State of the art multimedia classrooms (1.02), a dynamic learning management system (Moodle) environment (7.01; 7.05), faculty engaging students through IT resources (7.02; 7.04; 7.07), and a robust distance learning infrastructure (7.08) will enhance LSU's abilities to meet its performance indicators.

FITS (2011) encourages diversity. FITS (2011) provides the suite of IT services in order to effectively recruit and retain diverse students, faculty and staff. FITS stresses the importance of diverse platforms and multiple operating systems and the support of innovation (2.08). IT enablement can assist in broadening the cultural diversity of the university through technology enablement of a variety of programs.

FITS (2011) fosters engagement. IT enablement promotes the engagement of faculty, staff and students. Robust communications and document sharing tools (6.03) and e-mail (1.06) assists in broad collaboration. Ubiquitous wireless (1.08), access to resources from abroad and outside of standard business hours (2.04) and promotion of technology to students (9.01; 9.02) will aid LSU's efforts to work outside of the traditional classroom environment and become more engaged in the broader community.

FITS (2011) REVIEW, RECOGNITION, RENEWAL & REFRESH

What follows is the updated Flagship IT Strategy for LSU. It follows the form and delivery of FITS (2006), but “life-cycle refreshes” the plan, rather than presenting a totally new plan. This is both efficient and effective, as the original FITS was a document holding great vision from the community, but which did not overly focus on details. Similarly, FITS (2011) will also focus on desired outcomes and rationale for such, leaving the ‘how’ and ‘when’ of implementation to ongoing governance structures and focused, and FITS (2011)-driven initiatives to come in the months and years ahead.

Recommendation I: Provide a solid foundation of IT infrastructure at LSU that is modern and kept up-to-date.

Action Item 1.01: The University must provide its employees with the modern, information technology needed to be productive, including computer equipment appropriate to the discipline needs of the individual. A mechanism for maintaining up-to-date equipment should be established and tied to the annual review required by Property Management.

While departments generally pay for their IT using indirect cost rebates, salary savings, and through grants, this creates inequities as not all departments have the same resources available. Funding constraints exacerbate this issue. While the level of sophistication in hardware may vary depending on the individual, all LSU employees who conduct work on a personal computer should have the basic technology to be productive. At minimum, this technology should be able to run the most-up-to-date software and have the latest operating system in place to ensure the machine is secure and functions well. Old operating systems hurt the security and integrity of LSU’s network. This item is perhaps the most critical yet-to-be-implemented item from the original FITS and it remains today perhaps the most important and fundamental action that could be implemented. *While funding challenges and budgetary structures of the University certainly impact implementation, the community cannot state more plainly the criticality of Action Item 1.01; simply, a way must be found to implement this action!*

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.

Providing faculty with the classroom resources they need to teach successfully must remain a priority for the University. Efforts to increase the number of upgraded classrooms or provide mobile multimedia services should continue. A faculty member must be assured

that any classroom to which he or she is assigned will have a basic set of functioning tools that are ready for use. Standardized basic tools will facilitate easy transitions from room to room. Instructors should not have to worry that their lesson may be delayed by technical difficulties or that what they have prepared to use is not compatible with the equipment available.

Action Item 1.03: Even as services migrate to the cloud, significant resources should be directed to the modernization and maintenance of a robust central computing center in order to ensure the University continues to advance. The Frey Computing Center will remain the hub of vital systems processing and infrastructure.

The Frey Computing Center needs to have robust power, cooling, and bandwidth in order to continue to service the campus's IT infrastructure and applications needs. The University should complete the power and cooling project currently underway providing a facility capable of sustaining LSU's centralized IT environment and removing barriers from more effective centralization of computational resources and information storage and processing.

Action Item 1.04: The IT infrastructure needs of future buildings on the LSU campus—especially computing-intensive facilities—must continue to be addressed prior to construction.

As buildings are renovated and new facilities are constructed, the designs must take into account not only the wiring and network needs of the facility, but the cooling, ventilation, and power demands of increasingly technical building functions. This is standard practice across the University however the power and bandwidth needs of future buildings will likely continue to evolve. The University must be forward-thinking in its facility construction planning and must include information technology impacts in that thinking.

Action Item 1.05: The campus network, and its connections to external networks (both commodity Internet and advanced research networks), must continue to be able to handle large volumes of traffic and be nearly flawless in its reliability and availability. The network must continue to increase its bandwidth, versatility and reliability as the University continues to move to the cloud for its services and additional devices which utilize network resources arrive on campus. Thus, the University needs to ensure that the network features several, diverse, and redundant connections off campus so that downtime is virtually nonexistent.

Recent investments like Network2010 and the National Science Foundation's funded BIPAS project mean that the current network is state of the art. Continued investments will ensure that the network remains current. As the University relies increasingly on hosted services, the requirements for bandwidth and the reliability of connectivity will increase. The University needs to ensure that the network is flexible enough to continue its growth but capable of handling many levels of failure before an outage occurs.

Action Item 1.06: While e-mail remains the heart of communications infrastructure for LSU community members and a vital resource for the University in fostering collaboration and communication, the University needs to be able to respond to new trends in communications enablement. In the meantime, e-mail storage should be significant enough that the campus community can retain vital records of communications.

While it is apparent that students prefer SMS messaging or social networking tool communication mechanisms over e-mail for their communications in 2011, faculty and staff will likely continue to rely heavily upon e-mail for their communications (professional and personal) for the foreseeable future. Thus, while ITS will seek to find ways to support an e-mail-based institutional communication system at a lowered cost, care must be given to ensuring that it is reliable, functional, easy to use, flexible, and provides substantive storage space. ITS should also engage with the faculty/staff user community to ensure that overall messaging needs are met, either with a holistic e-mail service or a variety of services that easily facilitate the secure sharing (and storage) of very large files. ITS should remain vigilant to changes in the way that all LSU community members communicate, and work to enable the most appropriate communication tools and services as best meets those changing communications attributes.

Action Item 1.07: 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 continue to 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 rely upon a garden of architectures and a strategic suite of diverse technology vendors.

It remains imperative that the University’s progress continues to be unconfined by reliance upon single proprietary systems. The University should not limit itself to reliance on a single or very limited set of vendors. At present, the marketplace is too open and opportunities for competitive acquisition too great for LSU to be, by its own choice, single sourced

Action Item 1.08: The University’s wireless infrastructure should continue to be advanced so that access remains pervasive and ubiquitous.

LSU currently provides a superior wireless environment for its campus community. Access points should remain plentiful. The network as a whole needs to continue to be able to handle the increasing volume of WiFi enabled devices that are arriving on campus. Enhancements to wireless service and functionality – such as the 2010-implemented *eduroam* service – should continue to be explored and implemented by ITS.

Action 1.09: Increased dependence upon mobile devices has resulted in a need for more readily available infrastructure to support battery charging “on the go.” The University should explore alternatives to additional traditional AC power outlets; recharging technologies, mechanisms, and services should be explored for deployment in common areas

Charging stations like the ones that exist in airports should be put into place in order to charge the devices of LSU students, faculty and staff. As power is costly, alternative energy resources should be explored in order to mitigate the costs to the institution and the user.

<p>Recommendation II: Increase the accessibility of IT infrastructure and services to the LSU community</p>
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Action Item 2.01: All members of the LSU community should continue to have ready access to the IT software and resources they need to succeed.

The University should continue to provide the broadest possible offering of software tools to the community, seeking to leverage even more campus-wide site licenses, freeware and open source tools, and special institutional (and individual) pricing. In addition to software, a variety of other specialized tools should be made available for use by students, faculty, and staff. Every interesting and useful IT tool is not affordable to all individuals or departments; hence, having pools of these specialized resources for community access and/or check-out makes sense economically, while providing the richest IT peripheral environment to the University.

Action Item 2.02: The University should continue to maintain information stations with Internet and e-mail access placed strategically across campus.

While mobile technologies are increasingly commonplace, kiosks will remain of significant (if slowly declining) use on campus. ITS should monitor their usage and continue to provide the services while needed. Kiosks are low cost items and provide for post-life-cycle use of desktop computers.

Action Item 2.03: The Information Commons in Middleton should continue to be a showplace of IT infrastructure and resources promoting student and faculty collaboration in strategic areas across campus. Information Commons should be expanded to include increased support of all student and faculty IT-enabled activities, including support or research and areas beyond IT. It should also feature an ever growing array of services focused toward college/departmental IT support providers and information analysts, ensuring they are well positioned and well supported in their efforts to support IT use by the entire LSU community.

An Information Commons area is an interactive physical space that encourages and enables collaborative uses of technologies. The area has sufficient hotspots, ports, and electrical outlets to host several laptops and can be the site for podcasts, Web trainings, lectures, and the like. Information Commons areas are prevalent at top research institutions nationwide. LSU must follow this trend in order to attract and retain top students and faculty, and should endeavor to advance, enhance, and grow new opportunities for this critical and visible source of *IT Abundance* at LSU.

Action Item 2.04: Availability of and access to 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.

Students, faculty, and staff work outside of standard office hours. The community expects to be able to access University resources from abroad and outside of regular office hours. Efforts like the Virtual Lab should continue. The University should continue to explore involvement in global resources like *eduroam* and InCommon. In addition, LSU should provide robust and secure remote access like remote desktop and VPN resources.

Action Item 2.05: New faculty and staff should continue to have telephone services, e-mail, Internet access, and a suitable desktop computer in place upon hire.

The FITS-guided *Quickstart* application ensures that new employees have the necessary credentials to do their work. The University should continue to expedite all functional and support processes to ensuring that new hires have the complete array of IT enablements (telephone, network access, online identities, e-mail, etc.) and other administrative capability they need to conduct their business in place on their first day at work.

Action Item 2.06: The University should continue to ensure that emerging technologies interface well with LSU applications.

As applications are either deployed for the first time or replaced they should employ standards-based technologies that will integrate with emerging technologies for continued accessibility.

Action Item 2.07: The University should continue to deploy multiple means of IT skills training – through GROK, online classes, traditional classes, and tutorials – to ensure that adequate training regimes are available to every member of the LSU community.

Faculty and staff require access to just-in-time technical training and support in order to work effectively. Professors do not have the time and expertise to teach both the class material and the underlying IT skills necessary for course success. Students should have experts available to train them as well as time on the equipment to practice their newly acquired skills and complete assignments.

Action Item 2.08: The University should continue to support the use of multiple and diverse computing platforms (applications, 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.

The University should not be solely dependent upon a single vendor as shown by past experience. While strategic agreements may result in cost savings, these should be approached and executed with caution and with the understanding that no one size will fit all.

Action Item 2.09: The University should implement a tiered storage architecture for storage of institutional data as well as a database management system to support image, sound and video.

Reliable and plentiful storage is becoming increasingly vital to the work of the University. As faculty increasingly IT enable their courses, resource storage is currently an unfunded mandate. The LMS should continue to evolve its storage capabilities to ensure that course materials are available. Storage for research and administrative purposes also remains a high priority need.

<p>Recommendation III: Provide a robust, multi-tiered support enterprise to meet the varying levels and specific needs of the LSU community.</p>

Action Item 3.01: The ITS Help Desk should be a adequately staffed one-stop provider of robust, easy to use support, available 24 hours a day, 7 days a week, 52 weeks a year.

The Help Desk should continue to serve as a centralized customer relations center to address hardware, software, and telephony queries and services, Ease of use and effective user-support are integral to an IT abundant environment. The University community relies increasingly less on traditional work hours in order to do its work. Efforts to host online courses would necessitate increased availability of IT support. Mechanisms for troubleshooting and solving errors must be in place to serve the user community when the users need them. While recognizing that cuts in budget impact the viability of this action, it should remain an issue of prioritization; this need is apparent and long-standing and the question should not be ‘if’ but ‘when.’

Action Item 3.02: ITS should continue programs that provide improved communication and coordination between the key providers of IT support

distributed across campus and ITS. ITS should maintain a list of campus experts in various hardware and software support.

ITS should leverage the expertise that resides across campus in order to support all aspects of IT enablement expected on the campus.

Action Item 3.03: The University must significantly increase the number of IT support professionals on campus – especially in order to provide expert support in the departments.

Faculty rely heavily on very specific technologies for their research, and distributed IT support providers are often experts in those technologies. Providing qualified field support professionals will ensure that the research and teaching missions of the institution are enabled by technology. Researchers want to conduct research without being hampered by technical problems with the complex tools and applications they use. Such inefficiencies hurt research productivity and hinder steady progress. Having deeper pockets of talented and dedicated support to pervasive, if not pedestrian, information technologies would certainly increase the ability of those information technologies to have impact upon the advancement of research at LSU. It is also true that implementation of Action Item 1.01 can reduce the overall need (and cost) of this action item, by ensuring that valued IT support staff are free from having to deal with an equipment environment that is constantly failing due to age or lack of ability to best serve the use of the faculty. As a result, it is urged that this item and 1.01 be pursued as part of a joint implementation planning effort and that it be given the highest attention by University administration.

Action Item 3.04: ITS Help Desk personnel should continue to 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).

As part of the leveraged support model, the Help Desk should be staffed with personnel who possess specialized area knowledge that is up-to-date in addition to broader, basic knowledge of common technology. The needs of users are so broad amid the LSU community that the current model is not sophisticated enough to meet demand. Basic support and introductory-level needs in these areas must be addressed without taking away from productive and ongoing research projects.

Action Item 3.05: Vended and locally-produced documentation should continue to remain up to date and accessible through GROK.

High quality documentation is critical to understanding computing topics. In addition to vendor-provided publications, the University should produce information delineating critical University IT usage policies and local best practices.

Recommendation IV: Leverage LSU's existing IT investments, and expend funding resources in the most responsible and efficient manner

Action Item 4.01: 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 desktop computers, data and voice communication network provision, pervasive-use software licensing, and local IT support.

At present, the quality of desktops and laptops are dependent upon the user's ability to secure funding through a grant or upon the department's ability to cover the cost of replacement. This has created an environment in which faculty and staff must compete for scarce resources. Productivity often suffers because of incompatibilities with modern technology and equipment failures. Without a funded strategic plan to meet the long-term needs of a growing infrastructure, LSU faculty, staff, and students will not have the levels of capability and consistency needed to fully utilize the network in pursuit of their research, operational, and learning goals. This action item is also closely tied to 1.01 (and thus to 3.03 as well) and should likewise be addressed in conjunction with those other two critical action items. In fact, it seems that the address of those two items is nearly completely depending upon the development of an appropriate funding mechanism; it is not going to be possible to achieve success in those two critical items without appropriate funding strategies deployed under this action item.

Action Item 4.02: Cost-savings should continue to be found through the leveraging of resources, including the funding of campus wide agreements for equipment and software as well as for high performance computing resources.

While the campus community wants the flexibility to use a variety of tools, campus-wide agreements for heavily used technologies should be facilitated where possible. For example, the University has a successful Microsoft Agreement which provides operating system upgrades and the latest version of MS Office to students, staff and faculty.

Action Item 4.03: 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 the initial investment of capital for technology is often seen as relatively easy to acquire, funds for the support and maintenance of equipment are not readily available. Without support, new technology cannot be fully utilized. Investments in full-time support people must be made in order to reap the benefits of capital investments. This continues to be a challenge, even though FITS illuminated this need in 2006!

Action Item 4.04: Additional options for student-fee based funding—such as a new student software fees, infrastructure fees, and fees to support enterprise system modernization —should be explored.

The University should work to identify additional sources of funding in order to provide for the suite of services and IT infrastructure expected by incoming students and faculty. Additional options for developing funding mechanisms for critical IT infrastructure should be pursued by LSU administration as part of efforts to develop new means to provide overall needed funding mechanisms for LSU. These could include student-based fees for articulated technology purposes, including: Centrally-provided IT infrastructure and services (software, wireless/internet, enterprise systems, other FITS initiatives) and discipline-specific technology needs for classrooms, labs, and other IT-enabled facilities and programs.

Action Item 4.05: The University should restructure the Student Technology Fee’s oversight so that investments can be part of a long term strategy.

While students must have the ability to provide input into the decisions regarding investments of Student Technology Fee funds, there must be mechanisms put into place at LSU that ensure the continuity of critical infrastructure and services from year to year, as well as the ability to make long-term plans and investments in line with strategic needs that extend beyond the scope of an annualized focus of a given student government administration. Too often, priorities for investment are established without foresight and context for the long-term good of significant technology investments (rather than immediate perceived short-term impact). The investment of STF funds should be consistent with recommendations and action items articulated in the Flagship IT Strategy (this iteration or other, future versions developed and published as strategic IT plans for LSU). LSU should examine closely the Student Technology Fee Plan and also the bylaws for the operation of the STF Oversight Committee to ensure that more strategic control is vested in the faculty and the administration, without dampening the spirit of student leadership, involvement, and insightful input.

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: ITS should maintain a standard schedule for periodic external audit of the University's IT security infrastructure, policies and practices to ensure the integrity of the environment and protection of LSU's information

The University must make sure that processes are in place and working to protect against unauthorized access to the University's information technology infrastructure, unauthorized disclosure of electronic information, and security breaches. Continuing periodic external IT security audits will ensure that University resources are protected by best practices. Such audits should occur no less often than every two (2) years, performed either by LSU System Internal Audit (for PM-36) or contracted, IT Security focused entities (as designated by the Vice Chancellor for Information Technology and CIO or the Chief IT Security Officer).

Action Item 5.02: The University should continue to maintain and develop when necessary clear and forceful policies to address the integrity of information and the security of IT infrastructure resources.

IT security is the responsibility of all of its users. The continued development and enforcement of security policies should be done in cooperation with the larger campus community as a whole. There should continue to be responses to changing laws and legislation that involve access to specific types of data, in coordination with the campus's data stewards.

Action Item 5.03: Specific programmatic and physical mechanisms should continue to be in place to secure servers, protect sensitive information and assure IT security.

The University must provide the resources to ensure network security and meet the demands of federal and state regulations. The development and maintenance of robust identity, authentication and authorization services should continue. While network security is important to maintaining the integrity of our data and systems, the security of our data needs to be addressed at the individual and departmental levels as well. Data must be kept safe from breaches or exposures at all levels. Security awareness campaigns should continue to be part of this effort in order to protect the integrity of LSU data and network.

Action Item 5.04: Data backup services should be expanded to ensure the continuity and the future availability of data of all sorts – administrative, academic, and research.

Beyond concerns about a disaster or catastrophic loss, there are strong concerns about the ability of the institution—especially given highly distributed forms of institutional and quasi-institution data records—to recover from a loss of “live” production data. Aside from back-up procedures of main institutional data, there needs to be a solid regimen for frequently, periodic, individual back-ups of data servers, workstations, and other valuable and important files.

Action Item 5.05: The University should continue to fund and maintain an IT disaster recovery and business continuity plan.

Data back-up sites for disaster recovery and business continuity should be located in areas not likely to suffer the same impacts as the LSU campus (e.g., hurricanes). Disaster recovery planning and the assessment of risks and priorities should include both centrally-managed systems and distributed systems maintained on the campus or in various departments.

<p>Recommendation VI: Provide robust and plentiful IT resources to enable research at LSU</p>
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Action Item 6.01: ITS should maintain support for the Visualization Services Center (co-located with the Faculty Technology Center) and should support faculty-led campus efforts to develop other specialized IT centers to enable research and teaching.

The *Viz Center* provided by ITS should continue to provide tier one support for faculty and students interested in visualization-enhanced research. ITS should continue to be responsive to faculty needs for this sort of specialized support.

Action Item 6.02: Advanced research software and applications should be available to researchers via TigerWare, taking advantage of open source and leveraged licensing agreements.

Securing licensed research applications and software currently involves either expensive individual purchases or negotiations with other departments to purchase one of their group licenses. ITS should provide a centralized site from which licensed and freeware research software and applications (e.g., Fortran compiler, SAS, SPSS, Envivo) may be provided on centrally hosted systems, made available across distributed systems on campus, or downloaded for desktop use (via the TigerWare facility). Usage could be monitored to identify popular downloads in order to justify greater cost savings. 24x7 download availability will provide greater efficiencies and enable research productivity.

Action Item 6.03: The University should provide robust communication and document sharing tools to facilitate local and international research collaboration, including the provision of real time collaborative tools.

Researchers currently share documents via FiletoGeaux and e-mail, and are hampered by size limitations. Whether it is joint publication of a journal article or a grant proposal, multiple versions, edits, and complex graphics must be shared easily. Tools that may be accessed remotely and used by collaborators 24x7 must be in place. Collaborative authoring systems should be encouraged as a way to distribute content and encourage sharing. With the abundance of highly-intelligent, task-oriented professionals on the LSU campus, opportunities, and complementary incentives, for collaborative authoring should be in place to encourage a team-oriented mindset and sharing of technologies.

Action Item 6.04: ITS should coordinate with CCT to provide and communicate training opportunities and online tools for common research resources.

ITS and CCT should work collaboratively to provide useful training opportunities and leverage each other's communications channels to ensure that faculty and students know about the opportunities as they arise.

Action Item 6.05: ITS should coordinate workshops and seminars on emerging technologies used by the campus community in their research.

ITS should work with faculty to facilitate opportunities to share information on technology usage in the classroom and for research.

Action Item 6.06: ITS should coordinate interests and needs of various campus constituents in order to leverage opportunities for savings on resources and support.

ITS should seek opportunities to partner with researchers on large purchases of specialized software, hardware and support.

Action Item 6.07: The University – through ITS or the CCT, and with the support of the Office of the Vice Chancellor for Research and Economic Development – should develop a strategy for the provision of (or access to) high performance computing resources consistent with the needs of researchers at LSU.

Whether the responsibility for HPC resides within the OVCRED (CCT) or OVCIT (ITS) or a joint endeavor of both Offices and Vice Chancellors, a strategy for the provision of HPC resources must be developed and supported at LSU. Traditionally, this has involved acquisition of sufficient HPC cycles, storage, and software, and the provision of support staffing resources. In the future new paradigms of HPC provision may emerge, including cloud-based options, additional and modernized campus-based resources (consistent with action items in Recommendation 1 of this plan), additional regional HPC resources (e.g., LONI), and support in the use of national center resources as part of the US/global cyberinfrastructure environment. LSU currently lacks an articulated strategy for addressing campus research (and teaching and learning) demand for HPC, support for its

use, and a plan for funding provision and support. Such a strategy is urgently needed and its development should be a priority for 2011.

Recommendation VII: Provide robust and plentiful IT resources to enable faculty teaching and student learning at LSU.

Action Item 7.01: The University's single learning management system (Moodle) should continue to evolve to keep up with the changing needs and expectations of the dynamic learning environment. Moodle should be robust and flexible enough to integrate third party tools like video conferencing and have sufficient capacity to enable online learning and future remote classroom experiences.

Moodle's advancement remains a priority for the University. As the teaching and learning experience evolves, so should LSU's Moodle environment.

Action Item 7.02: The University should embrace student-centered technologies beyond the laptop and be prepared to support the emerging technologies of the future.

While clickers and laptops are commonly used now, faculty should be ready to adopt new technologies. ITS should respond with training, support and the infrastructure robust enough to handle the needs of emerging technologies. Course capture, interactive online learning, and video/media streaming are examples of emerging desires.

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.

The University has set a sizable increase in graduation rates as a key objective. An easy to understand application that would demonstrate what available courses fit an individual's program and how a degree is progressing would enable efficient course selection. CATS is currently in place and should continue to advance and be supported.

Action Item 7.04: ITS should continue to encourage instructors to find ways to integrate use of technology into the learning experience, and do so more aggressively and attentively in the next few years.

ITS and its Faculty Technology Center should continue to provide opportunities for faculty to share how they are integrating technology into their classrooms and research.

Action Item 7.05: The use of electronic texts should be encouraged and integrated into Moodle.

Current e-text readers and e-texts are not accessible to visually impaired students. As these technologies evolve and are made accessible, the University should be ready to respond with their inclusion in Moodle.

Action Item 7.06: Computer based testing should continue to evolve as should in-class assessment resources.

The University should leverage technologies in order to assess student learning, measure student success and facilitate retention. Computer based testing provides an important resource especially for large courses and will need to continue its evolution in order to assess distance learning.

Action Item 7.07: The Faculty Technology Center (FTC) should have a satellite location (e.g., Patrick Taylor Hall or other location) so that faculty have improved opportunity to avail themselves of FTC services unhindered by distance.

The Faculty Technology Center has proven to be a valuable resource for faculty. Its location in the library is very convenient in many regards and promotes interaction with students in the Information Commons. But the location is not convenient for all and may, in fact, be inhibiting faculty up-take on use of the service and integration of technology into their teaching. Faculty would like to see satellite locations – at least one new location to start – placed strategically on campus to add walk-up assistance. Such could be accomplished using rotating schedules of availability or access to “immersive” technologies such as telepresence providing a virtual walk-up host.

Action Item 7.08: The University should establish and support robust mechanisms for developing distance education, course content capture infrastructure, and mobile computing.

Video and media streaming support as well as the infrastructure to capture and retrieve course content needs to be a priority for the next few years.

Recommendation VIII: Provide 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.

Action Item 8.01: The University must work to replace its mission-critical enterprise systems and move toward implementation of an enterprise resource planning (ERP) solution. The University should in 2011 conduct a needs assessment and gap analysis as well as establish a timetable for the migration and a strategy for implementation before the end of 2015.

LSU's current legacy mainframe systems, which provide the backbone of the University, will not remain supportable due to the technologies underpinning these systems. The legacy systems are written primarily in COBOL and Lotus Domino, languages that are no longer being utilized by the market or taught in schools. LSU's enterprise systems are maintained by talented people who have reached or are fast approaching retirement age. The COBOL-,

Lotus-Notes-based systems supporting critical LSU financial, student, human-resources, and other enterprise functions will not last out this decade. A new strategy must be developed, accepted, and sufficiently funded to ensure the un-interrupted functioning of the Institution. ITS and the functional units (Finance & Administrative Services, Student Life & Enrollment, Academic Affairs, etc.) must explore strategies for modernizing and sustaining these critical systems, including vended solutions (ERP), community source solutions (Kuali), or even the strategic regeneration of legacy systems (though this strategy may be less than optimal). This must become a priority for LSU administration in the next 2-3 years, so that sustainable solutions can be deployed before existing systems cease to be supportable.

Action Item 8.02: University Administration (Chancellor, Provost, and Vice Chancellors) should establish effective mechanisms for the overall prioritization, coordination and oversight of planning for the maintenance of existing, legacy information systems while strategic replacement of these systems is underway.

It is clear that the ultimate replacement of the main, critical enterprise information systems at LSU will take time to adequately plan, acquire, and implement. During this period, the Institution must continue to operate on the existing legacy systems. However, it is not feasible to continue to enhance and evolve these existing systems before their ultimate replacement, except in cases of legal mandates, critical annual updates, or the repair of faulty logic and code. A tightly specified protocol for making changes (or not making changes) must be put into place, and should include key input from functional areas (data stewards) and IT governance. While the applications themselves fall under the purview of the various business operations across campus, responsibility for the underlying system infrastructure falls to the Vice Chancellor for Information Technology. The VCIT can spearhead an effort, but all impacted area Vice Chancellors must subscribe to and actively engage in this process.

Action Item 8.03: As required, 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.

While the main applications will likely be part of an ERP solution, smaller custom applications will still likely be required. As these solutions are sought, ITS should advise on the ability of these vended applications to interface with the new environment and should develop applications when other solutions are not available.

ITS should continue to explore and identify new technologies that could improve basic technology services to the campus community and enterprise information systems within the University, and to make cost-effective investments in core technologies such as storage.

Action Item 8.04: A university committee should be engaged to develop a representative formal group to guide the implementation of new enterprise information systems.

Since there cannot be a real break in the business of the University, processes must be in place to guide not only the introduction of new systems, but to have clear transfer times that work with the needs of various campus constituencies. This committee should consist of leaders from the various divisions that have the functional area responsibilities that will be addressed by the new ERP. A well-represented committee is best positioned to assign responsibility for the ERP's functional implementation.

Action Item 8.05: The University should provide information systems that encourage research and scholarly productivity and foster quality and competitiveness in graduate and undergraduate students in addition to systems that foster the efficient and effective day-to-day operation of the University.

The University's underlying information systems are as important as the infrastructure in meeting the goals sets forth in its Flagship Agenda 2020. ITS should be a strategic participant in the Flagship process. Well-designed information systems facilitate institutional achievement and transform the business process. While internal development will be limited to those strategic services not available through vended or open source venues, ITS should work to ensure the quality of new programs (however acquired) evolves and does not hinder progress already made through enhancements.

Action Item 8.06: ITS 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, ITS 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.

As the highly integrated legacy system is replaced by stand-alone solutions, the need for a central repository of data for reports and ready analysis will become vital. Reporting tools and expectations are evolving and the environment for data delivery should keep up.

Action Item 8.07: ITS should incorporate user-centered design techniques in major systems development projects to support the efficient and effective accomplishment of the day-to-day administrative tasks of the University.

Utilizing standards and best practices, including ADA compliance, in user-centered design will provide for ease of use. As enterprise systems are replaced and specialized systems are developed and deployed for use, there should be an effort to use a common interface. A goal for all of the University's information systems is selection of technologies that are appropriate to the needs of their various users, suitable to the business need that is being addressed, and intuitive. While University information systems are used to varying degrees by different constituencies, a consistency should be sought to make them more user-friendly. There should be a commitment to deploying ADA compliant applications that have a user-centered design, bringing an explicit focus on usability of University information systems.

Action Item 8.08: ITS should continue to leverage available off-the-shelf systems including open source and vended systems.

The legacy systems required custom, in-house development. With the retirement of key programmers, this level of development is no longer a long term option. The University must rely on off-the-shelf systems whenever possible.

Action Item 8.09: ITS's new portal (myLSU) should 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.

As ITS replaces its PAWS portal, it needs to ensure that the functionality currently in PAWS remains. LSU has achieved recognition for the highly integrated and user-friendly common interface presented by PAWS (a Web-based portal). However, this common interface has also been reflected in an information systems architecture that is so tightly coupled that failure in one component can bring complete access to all systems and utilities (like e-mail) to a complete halt (or significantly degraded level of performance). As the underlying enterprise environment uncouples, the new portal should maintain the feel of a common interface for disparate systems while deploying new architectures that provide at the very least alternate access to key systems in a more fault tolerant manner.

<p>Recommendation IX: Support LSU student use of IT, not only as a tool in their learning, but to enrich their life experiences at LSU</p>

Action Item 9.01: LSU should develop a program of incentives to increase student ownership of computers and other related devices, 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.

There should be a concerted effort to make acquisition of computer hardware easier and as inexpensive as possible, and to provide a variety of incentives and programs to facilitate that acquisition. LSU students must be IT-enabled. The institution must develop ways to encourage laptop/computer ownership and ITS should be charged with developing, implementing, and operating such a program on the University's behalf.

Action Item 9.02: 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.

The life experience of a student at a flagship University involves more than just their academic experience. Information technology—and technology in general—has become an underlying component in all things in the twenty-first century. Indeed, the adoption of IT in classrooms and throughout campus as part of teaching and learning is critical to the student life experience; but also of interest and potential value are the recreational aspects of college life that are IT enabled. ITS should explore new and creative uses of technology that better the overall college experience, including those involving such things as music/video download services, and other forms of recreational technologies. It will always be the case that students will need to elect which such college-life-enhancing technologies they adopt either as individuals or as members of the LSU student community—and elect how such technologies are funded. But the role of ITS should be to explore and introduce these technology options to students, and present an attitude of advocating their adoption, and support such adoption in line with student interests and resources.

Action Item 9.03: 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 maintain a seamless IT environment across all parts of the campus.

Students want consistent, ubiquitous network service across campus. ITS should explore offering wireless access to leased Greek Houses. This would present a possible resource for revenue or cost-recovery, and would provide consistency to this constituency. Wireless services should be accessible across campus, without necessitating a switch when traveling from one point to the next. The campus community wants IT to work flawlessly and effortlessly. Mobility and the ability to check the Web, conduct business, and stay connected to LSU are important to today's LSU student and employee alike.

Recommendation X: Provide 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 continue to 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.

The IT Governance structure put into place in 2010 provides the means and mechanisms for continued involvement of the campus community in the implementation of IT strategies

and service directions at LSU. This structure should be nurtured, supported, and occasionally reviewed for modification by the LSU Faculty Senate, LSU Student Government, OVCIT/ITS leadership, and the administration of LSU (including Deans, department directors/chairs, and key staff). While this action item has been effectively completed, it should be an ongoing concern.

Action Item 10.02: ITS plays 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.

LSU ITS employs several mechanisms for communicating campus IT services and news. GROK and the newly designed ITS Web site provide a rich set of information on the catalog of IT services provided to the campus, in keeping with the specifics set forth by the original FITS. Tech Talks, ITS listserv and the TSP portal are other venues for sharing technical information electronically. Facebook, Twitter and the ITWire are used to broadly communicate changes and news impacting the campus IT experience.

Action Item 10.03: ITS should maintain a program of activity based 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 regularly scheduled user satisfaction survey, so that cost and quality of service (in terms of user value) can be illustrated.

The University has been faced with daunting cuts of state funding and ITS has had to not only streamline its operations, but identify ways to measure the true costs of services. ITS benefits from a more detailed analysis of its underlying cost structure (for services) and the sharing of that information broadly throughout its own organization and across the community of its users/customers. The community will benefit by having a better and richer understanding of both the cost and broadly-perceived value of ITS services, and this will help better guide the advice and direction the community provides to the central IT organization.

FACULTY SENATE IT GOVERNANCE ADVISORY COUNCIL

Teaching & Learning Council

Lawrence Rouse (chair)	Coastal Studies
William Grimes	Music
Joseph Legoria	Accounting
Sarah Liggett	English
Lu Peng	Electrical & Computer Engineering
Kresimir Rupnik	Chemistry

Infrastructure & Support Council

Andrew Christie (chair)	Accounting
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Research Enablement Council

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Alice Daugherty	LSU Libraries
Susan Dumais	Sociology
Juana Moreno	Physics & Astronomy
David Senior	Veterinary Medicine
Philip Tebbutt	Interior Design

FACULTY SENATE RESOLUTION 10-08

“Establishment of an IT Governance Model”

Introduced at the recommendation of Chief Information Officer Brian Voss

Whereas information technology is an essential component of LSU’s National Flagship Agenda and the Flagship IT Strategy (FITS) was created through the leadership of the LSU campus community, including faculty; and

Whereas the Flagship Information Technology Strategy (FITS) was fully supported by LSU Faculty Senate Resolution 06-11; and

Whereas the implementation of the FITS Recommendation 10, Action Item 1 calls for the establishment of a formal IT governance model, and

Whereas the existence of a formal IT Governance model is a critical component of further strategic advance of IT at LSU and also its ongoing operational activities, which are of importance to the faculty (and students and staff) of LSU;

Therefore be it resolved that the LSU Faculty Senate endorses the establishment and maintenance of a formal IT Governance Model as proposed by the Vice Chancellor of Information Technology & Chief Information Officer in March 2010, and will actively engage in leadership and participation in the governance of the deployment and operation of information technology infrastructure and services at LSU in line with that model.