

## 2010 Campus-wide IT Strategic Planning Summary

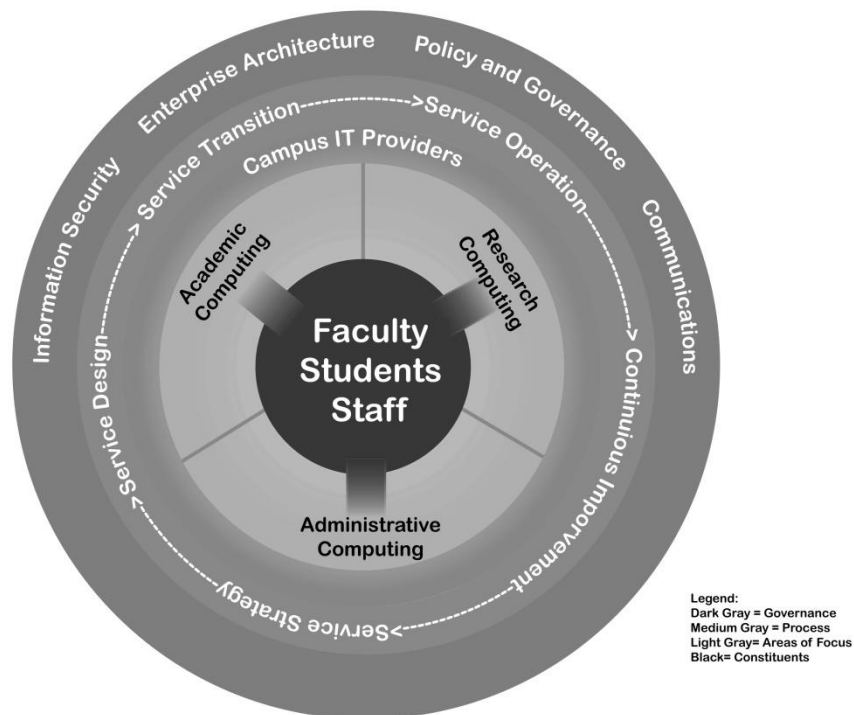
### A. Taking Stock: IT Today: ITS Operations & Overview

Information Technology at CU-Boulder is facilitated through a centralized organization and numerous decentralized services and offices throughout campus. Information Technology Services (ITS) operates many of the centralized IT efforts on campus—providing support for faculty, students, and staff in three primary service areas: academic computing, research computing, and administrative computing (see figure 1.1)—and works in conjunction with decentralized IT services in academic departments, university offices, and affiliated research institutions. Enterprise Resource Planning (ERP) systems are maintained by UIS (University Information Systems) for the three University of Colorado campuses which jointly govern UIS. In the fall of 2010 CU System implemented massive ERP implementations, ISIS, which is the student information system for all three CU campuses and InfoEd, a new research administrative system.

ITS is comprised of approximately 270 employees, including roughly 170 staff employees and 100 student employees. IT units across campus operate in conjunction with central ITS to provide localized, effective support. These units include the Leeds Business School, the Law School, and the School of Arts and Sciences. Other IT personnel administer specific IT tools and services within national research labs and institutes affiliated with campus. Roughly 300 computer support representatives (CSRs), who are decentralized, but come together in community IT forums three times a year, provide a link between academic, administrative, and research organizations across campus.

ITS' mission is to provide and promote an IT service and support organization, in partnership with departmental IT units, enabling the creation, management, and dissemination of information to advance the campus's teaching, learning, and research, as well as providing effective leadership and IT solutions for the campus. Figure 1.1 depicts the general operations of IT at CU-Boulder. As the diagram indicates, faculty, students, and staff receive IT services in three areas: Academic Technology, Research Computing and Administrative Computing from ITS and a range of campus IT providers. Providing services is shown as the on-going process of involving research and evaluation, service or tool design, transition to the new tool or service, operation of the tool or service, and continuous improvement (see figure 1.1). Finally, current and future initiatives are enabled and supported by policy and governance, information security, and enterprise architecture—each providing guidance and the ability for IT growth on campus.

Figure 1.1 ITS Operations on Campus



### ITS Budget information

Investments in IT primarily fall under one of four categories:

- Campus programs and projects (28%)
- Academic technologies and spaces (25%)
- Support, operations, and services (including network and telephony) (42%)
- Administration & support (5%)

Most of the campus programs and projects budget is devoted to one of three primary categories:

- Research computing (28%)
- Enterprise infrastructure (IT security, storage, virtualization, messaging & calendaring, etc.) (29%)
- Program and project management (salaries and support) (27%)

These three categories account for nearly 85% of the programs and projects budget.

The 2010-2011 Operating budget for ITS is \$32,256,018.

### Common Good

As technology becomes increasingly important and ever-present across campus it also becomes second nature—students, faculty, and staff expect particular IT tools and services to

be available to them. Such ubiquity demonstrates the tremendous role IT plays in campus life and CU-Boulder provides a suite of Common Good IT services and productivity tools to General Funded departments in support of the university's teaching and research mission and recognition of IT's integral role in campus operations. These pooled IT services and tools are centrally paid from the highest level of the university, provided at no direct cost to the department. The current suite of IT common good services includes:

- A robust wired network (includes Internet2 and LambdaRail)
- Universally available wireless network including all campus buildings and strategic open common spaces as well as access to a campus VPN
- Faculty purchase and renewal program allowing all faculty a significant subsidy for a new computer every several years;
- Free antivirus and encryption to protect data as well as access to a variety of major software licenses
- Integrated email, calendaring, and scheduling (Exchange)
- Accessible and multi-layered IT support including both centralized and dedicated IT personnel
- Classroom and online IT training

In light of recommendations communicated through the 2010 IT Strategic Plan, additional potential common good services being pursued include: data center(s), storage/backup, phones, additional licensed software (i.e. Kronos), GigE, desktop support

## **B. A Look at Past IT Strategic Plans and Accomplishments**

Past campus-wide IT Strategic plans have laid the foundation for many important IT resources and practices including:

**1998:** Establishment of the faculty computer purchase program, formation of the Distributed Academic Technology Coordinators (DATCs), creation of the 4-tiered IT support model, formation of the CIO Office and IT Council.

**2002:** Development of the student and faculty/staff portal, maturation of IT infrastructure (i.e. Enterprise Directory, enterprise architecture), creation of the student IT literacy/fluency effort, launch of the IT Security Office, formation of IT Infrastructure Advisory Group (ITIAG).

**2006:** Coordination of email environment (Exchange for faculty/staff, external email provider for students), new network funding model, campus-wide MS site licensing, maturation of security environment with departmental IT risk assessments and disaster recovery/business continuity plans.

The 2010 Strategic Plan follows this trajectory of significant achievement.

### **Building on Lessons Learned**

It is important to note particular opportunities for growth and development.

One opportunity lies in building upon CU-Boulder's role as an innovator in collaborative, cross-disciplinary research, which makes CU-Boulder an ideal home for developing research computing across various national labs and institutes. Currently, CU-Boulder enjoys

collaborative relationships with a number of research labs and institutes on campus, including the National Center for Atmospheric Research, (NCAR) the National Snow and Ice Data Center, (NSIDC) the Laboratory for Atmospheric and Space Physics, (LASP) the Cooperative Institute for Research in Environmental Sciences, (CIRES) and the Joint Institute for Laboratory Astrophysics, (JILA). Strengthening and supporting these existing relationships as well as fostering new research development is integral to CU-Boulder's pursuit of Flagship 2030's goal of fostering research excellence.

A second opportunity exists with better utilizing technology tools, spaces, and support for transforming teaching and learning. Better coordination and collaboration with schools and colleges would realize best practices, support models, and research opportunities. Innovative ideas and leadership practices exist within Faculty Teaching Excellence Program (FTEP), Graduate Teacher Program (GTP), A&S Support for Education through Technology (ASSET), and the ITS Academic Technology Group.

A third opportunity for growth and development is web infrastructure. The last significant contribution or advancement in available web hardware and software infrastructure on campus occurred ten years ago in 2000. Improving web infrastructure services in support of communication and web content is a high priority on campus and one which can no longer be sidelined.

### **C. Looking Ahead: IT Tomorrow, Envisioning a Transparent and Flexible Campus-wide IT Environment that Fosters Engaged Participation**

The themes found throughout the reports and detailed here in the executive report on the following pages also reflect additional areas for growth and development. The themes—transparency, collaboration, and flexibility—represent the desire to formulate more open, deliberate, and cooperative IT tools, support, and resources. Each theme occurs frequently both among and within the committee reports indicating a strong, shared sentiment of readiness to participate in the future of IT at CU-Boulder. These themes are ubiquitous throughout the committee reports and therefore send a strong message of the university's vision of IT in the coming years.

#### **Transparency**

The theme of transparency includes a strong desire, on behalf of various campus constituencies, to learn more about the processes and operations of IT on campus as those operations impact particular populations. Transparency refers to understanding current IT and ITS uses, needs, and demands and employing such an understanding in future action through rigorous and varied assessment and evaluation practices. The need for assessment is a strong reoccurring subtheme and one made explicit in specific recommendations, as indicated below. The theme of transparency documents a desire to proceed rationally and judiciously into IT and ITS decisions and view assessment as integral to doing so. Finally, transparency encompasses the need and desire for clear, accessible, widely-distributed communication regarding ITS and IT tools. Such communication is necessary not only between ITS and its constituencies but among decentralized ITS personnel and offices across campus.

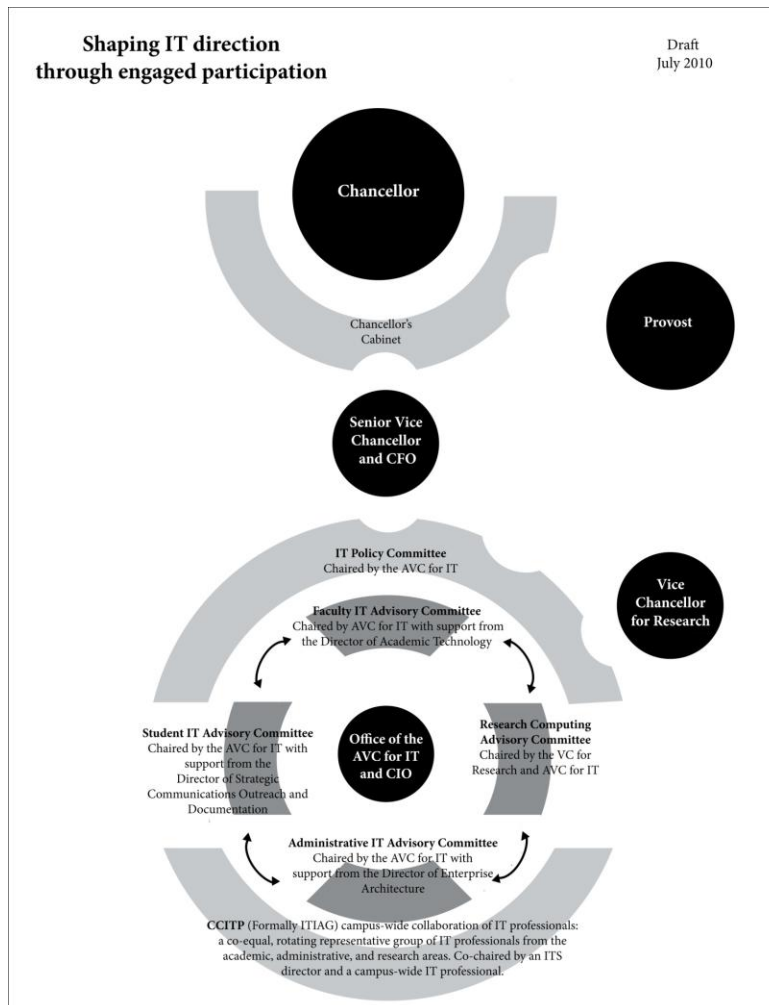
#### **Flexibility**

The theme of flexibility refers to the necessity of dynamism and adaptation in addressing and supporting technology needs across campus, meeting various teaching and research demands,

addressing the requirements of diverse students, faculty, and staff, and integrating a range of tools and services. As a theme, flexibility revolves around the overt recognition of the diversity of academic disciplines and campus populations and their varying IT needs and includes implicit reference to the value placed on academic and scholarly diversity throughout the university. While it is important to support various research and learning needs, the theme of flexibility works in tandem with the theme of engaged participation and transparency—in other words, a flexible IT environment responds to specific needs, but does so in a larger context of sharing and openness. Additionally, flexibility refers to the desire for IT tools and services to not only respond to but anticipate IT changes for campus populations and departments.

## Engaged Participation

Engaged participation, as a theme, includes an expressed desire and need for increased collaboration, cooperation, and sharing across campus concerning IT tools and services. Beyond cooperation and sharing, this theme suggests ITS actively involve other university offices in decisions regarding the structure and pursuit of IT across campus, particularly when it comes to support for teachers and learners, developing research computing initiatives, partnering more closely and consistently with schools and colleges, administrative units and research institutes. In many ways this theme is an exciting and crafts a picture of a campus eager to become involved in IT operations and future development. See figure 1.3.



## **D. Tomorrow's IT and Today's Priority: Recommendations of the 2010 IT Strategic Plan**

Extensive independent research preceded the 2010 IT Strategic Plan and culled information from students, staff, faculty, and IT professionals about the effectiveness of IT and ITS on campus as well as concerns, challenges, and contentment with IT and ITS. The research culminated in rich data revealing campus constituencies, while content with the effectiveness of available tools, were less satisfied with the operations and processes involved in IT resource development and support. In surveys and focus groups, participants expressed the need for better communication between campus populations and ITS, a desire for more transparency and involvement concerning IT decision-making processes, and the importance of working with ITS and other groups on campus to address challenges and work toward technology-related goals. Tellingly, these themes appear within and throughout the reports comprising the 2010 Strategic Plan.

### **1. Enable the Research Enterprise through Research Computing**

CU-Boulder is poised to become a leader in research computing development and operation because of its commitment to research, close working relationships with national research labs, including the National Center for Atmospheric Research, (NCAR) the National Snow and Ice Data Center, (NSIDC) the Laboratory for Atmospheric and Space Physics, (LASP) the Cooperative Institute for Research in Environmental Sciences, (CIRES) and the Joint Institute for Laboratory Astrophysics, (JILA).

Dedication to research computing development and deployment is a large component of fulfilling CU-Boulder's commitment to research support as articulated in the campus-wide strategic plan, Flagship 2030; not only will advancements in research computing across campus help facilitate growth and excellence in research, the open, collaborative, and flexible spirit in which such advancements are pursued will help ensure research computing resources allow for new approaches to research, scholarly, and creative work, and bolster structural support for research and creative programs across campus.

*Flexibility:* Create a Research Computing and Cyberinfrastructure group to develop, maintain, and promote the university's research community in a variety of research areas and disciplines.

*Transparency:* Develop a transparent, fair, and representative funding model and faculty oversight committee.

- Communicate to the campus community the plans of the faculty oversight committee as they pursue development of a central research-computing center and adopt relevant policies and procedures.
- Solicit additional campus input and needs assessment in establishing resource needs and an IT Infrastructure Strategic Plan in conjunction with Facilities Management.

*Collaboration:* Foster a shared and cooperative atmosphere around research computing tools and an environment wherein scholars and researchers may pursue a spectrum of academic and creative agendas.

- Establish a committee of faculty researchers to oversee the development of central research computing and ensure resources meet campus needs.
- Encourage and foster collaboration through research efforts integrated with national efforts and initiatives, thereby increasing opportunities for partnership between individuals, other research universities, national centers, and private industry.

- Develop increased cooperation between ITS and Facilities Management in crafting and enforcing standards and guidelines for research center program planning and building design.

## **2. Supporting Teaching and Learning through Effective IT Tools, Spaces and Support**

Teaching and learning is fundamental to CU-Boulder's current and future success. Flagship 2030's Core Initiatives highlight a desire to further support and advance undergraduate and graduate education as well as student and faculty scholarship. In the coming decades, CU-Boulder is committed to exploring evolutions in the content and mode of teaching, increasing the number of graduate students on campus each year, and providing the resources for research excellence. As teachers and students pursue research and learning agendas, IT will continue to support their creativity, exploration, and success.

*Flexibility:* Ensure teaching and learning tools and services are amenable to diverse and changing needs as well as a broad community of users.

- Understand the variety in disciplinary demands and coordinate closely with departments regarding specific departmental need for teaching and learning spaces.
- Determine how learning spaces can support dynamic learning environments that respond to both student driven needs and creative faculty inspired learning environments.
- Provide support for both discipline-specific as well as widely adopted technologies.
- Explore learning management systems with more open frameworks allowing for a flexible and organic user experience.

*Transparency:* Fund, conduct, and publicize regular needs assessments and evaluations across campus to inform decisions about teaching and learning support services and resources.

- Invest in pilot studies to determine need and use of new technologies.
- Research effective practices for supporting teaching and learning with technology.
- Base decisions about funding and support for teaching and learning with technology in research concerning needs.
- Clearly delineate technological services available across campus and communicate those services to students, faculty, and staff.

*Collaboration:* Involve students and faculty in conversations concerning campus assessments and evaluations and the resulting policy and resource decisions.

- For every central adoption of a new technology service or application on campus, invest sufficient funds to ensure adequate user support.
- Create and nurture a collaborative support environment on campus.
- Promote shared, multi-functional, cross-departmental environments across campus.

## **3. Enhancing the Student Experience**

CU-Boulder's students are exceptional, and providing them with a rich and rewarding academic and university experience is fundamental to the university's mission and goals. As IT becomes an increasingly central focus of daily life, it is important to understand how campus IT can enhance the student experience outside of the classroom. Continuing to improve the IT student experience involves attention to campus libraries, highly mobile computing, housing and dining services, and the management of student information. Together, these areas of student life can

foster a seamless IT environment for students, bolstering their academic achievements and smoothing the way for a path of collegiate success.

*Flexibility:* Account for a range of needs and interests among students in accessing and receiving information and utilizing tools.

- Provide training for students and faculty using joint or multi-use library learning spaces as well as training and education in integrating ITS and library supplied tools.
- Adapt multiple and dynamic strategies for communicating with students to account for communication preferences and future changes in communication technology.
- Incorporate discipline-specific portals for information made available to students regarding current faculty and student research.

*Transparency:* Increase communication and assessment strategies between ITS and campus resources concerned with the student experience.

- Develop more extended and frequent communication between ITS and campus offices and divisions devoted to student life. Such communication includes ITS and:
- the Libraries (concerning iTunes U, Alliance for Digital Repositories, and other current and future large projects)
- Structured communication processes with University Information Systems and campus departments.
- Regular service meetings with Housing and Dining Services to address IT processes, procedures, and future development as well as identify the opportunities and challenges involved in benefitting the student IT experience.
- Conduct assessment to understand how to best utilize space and technology resources on campus for students outside of the classroom—in library spaces, residential spaces, and other campus buildings—and align space planning with needs.

*Collaboration:* Work with campus divisions and offices to provide the IT resources necessary for student success and successful student services.

- Partner with the Libraries in IT-related developments within the Library Renaissance Plan.
- Improve the integration of campus-based systems with ISIS (the Integrated Student Information System).
- Work collaboratively with Housing and Dining Services to craft mutually acceptable funding models.

#### **4. Fostering Efficiencies for Campus Staff and Realizing ROI**

As IT reaches into every corner of the campus, understanding how IT may best be utilized to ensure the seamless machinations of campus life is an important concern. To best serve students, faculty, and staff, ITS is committed to reviewing and improving its service model and overall structure—a process involving a consideration of cloud computing and rich collaboration tools and how those resources may increase staff efficiency, as well as IT support services and ITS' relationship with campus customers.

*Flexibility:* Employ extensive knowledge of unique departmental, disciplinary, and office operations and demands in addressing staff efficiency.

- Consider development of cloud computing and rich collaboration tools from a variety of campus and disciplinary perspectives.

- Adopt an agile IT customer service model in recognition of high variation among staff members in terms of business function, available resources, and technological proficiency.
- Create new and distinct units within the ITS organization to provide specialized expertise in specific areas of need across campus such as Security, Research Computing, Academic Technology, and Classroom Support.

*Transparency:* Ground new developments in thorough assessment and evaluation and incorporate feedback into IT resource and policy decisions.

- Conduct needs assessment and evaluation to measure changing IT needs across campus in the areas of teaching, research, and administration and gauge those needs against the IT service model. Evaluate possibilities for achieving efficiencies through hardware or software standardizations.
- Cultivate feedback and communication throughout all components of the IT service model to better meet the needs of units and end users.
- Discuss IT service changes with campus users in a proactive manner amenable to input: create a webpage where proposed changes can be made public and users can offer policy feedback.
- Create measurable benchmarks by which to objectively evaluate, understand, and promote staff efficiency and effectiveness and in turn recognize and eliminate inefficiency and inefficacy.

*Collaboration:* Involve a range of voices in developing new tools and services relevant to campus staff.

- Establish an IT Policy and Oversight Board to develop new policy for ITS and coordinate policy with other IT units to meet the needs of all users; incorporate campus feedback into all Policy and Oversight Board decisions.
- Task a group to explore salient issues in cloud computing on campus such as how best to wrap cloud services, control data sent off site, mitigating risk, and meeting compliance requirements.
- With input from various campus units, craft and implement a consistent approach to developing a common collection of collaboration tools across campus.

## **5. Developing Strong Communication**

Strong campus communication embodies many characteristics—it is circular rather than unidirectional, provides a consistent message, and is supported by an appropriate and efficient architecture. As of the summer of 2010, ten years have passed since CU-Boulder last made a significant investment in campus wide, generally available web hardware and software infrastructure in support of communication and web content. Web Communications, which operates under University Communications, manages the design, content and organization of CU-Boulder's official web site in addition to developing (for a fee) customized web sites for campus departments. Improving web infrastructure services, tools, and support—ultimately that are provided as a common good—and developing strong and inclusive communication strategies between ITS, University Communications, and campus constituencies is therefore a campus priority.

*Flexibility:* Adopt and deploy a web content management solution dynamic and versatile enough to address many of the technology combinations and needs throughout campus and foster a robust, multi-purpose web hosting environment.

- Create and hire positions necessary for maintaining adequate and future-looking web support.
- Establish stronger campus web support, training, and a community for university web developers and content managers to ensure infrastructure and content reflect changing needs and communication strategies.

*Transparency:* Determine current uses of and needs for communication technology and communication infrastructure throughout campus.

- Conduct both preliminary needs assessment and follow up evaluation regarding web content management solutions and web hosting.
- Achieve compliance with CU-System web branding standards through review of identity standards and current web content as well as initiate periodic audits of content.
- Perform periodic inventories of campus organizations maintaining IT structures to guide campus IT strategic planning and leverage IT expertise on campus.
- Evaluate use of current campus communication technologies throughout campus; partner with student-facing organizations such as Student Affairs and Housing to conduct assessments of student IT support needs and use of specific communication technologies.

*Collaboration:* Increase and streamline ITS communication across campus and promote unified public campus communication.

- Redesign and reorganize the current ITS website to promote simpler navigation and current usability standards.
- Implement strong cooperative ties between ITS and University Communications to combine technical expertise and critical expertise in public communications.
- Expand face-to-face ITS communication with students, faculty, and staff through enhanced training and orientation programs.
- Create and communicate a campus-wide IT mission statement in line with Flagship 2030; if necessary, alter mission statement periodically to reflect changes in technology and campus vision.

## **E. Conclusion**

This report is the culmination of countless conversations, drafts, and rewrites that occurred among faculty, students, and staff. The outcome of their work occur in the following chapters, which are broken down by major area: chapter 1: teaching and learning, chapter 2: shared resources and support, chapter 3: collaborations and partnerships, and chapter 4: governance, budget and communications.

Each subsection follows a template in order to provide consistency with each topic area: the major issue stated, followed by a description of the background and rationale with accomplishments to date referenced. Then, each subsection develops an action plan which articulates explicit assumptions, outlines specific recommendations and provides short and long term goals, resources needed, responsible parties as well as ways to measure success and evaluate the initiatives proposed.

Chapter four, specifically the governance diagram and proposed plan of engaged participation in IT decisions, provides the “how” of how we will prioritize and evaluate the initiatives outlined in chapters one through three. Ideas and initiatives outlined in the report will be discussed within

this new governance over the course of the next several months. This plan, similar to past IT plans is meant to be a working document in spirit, in other words, a map which allows for the campus to forge ahead with new innovative ideas and practices that break down barriers and better support the campus.

**Presence/Absence of Themes in Specific Recommendation Sections and Short/Long Term Objectives by Report**

	Need for Flexibility	Future-Looking	Disciplinary Difference	Assessment	Communication	Transparency/Openness	Underlying Support	Voice/Involvement	Cooperation/Collaboration
1.1 Support for Teachers and Learners									
1.2 Providing Teaching & Learning Spaces									
1.3 Offering Teaching & Learning Tools									
2.1 Research Computing & Cyberinfrastructure									
2.2 Facilitating Cloud Computing									
2.3 Campus Strategy for Mobile Computing Support and Services									
2.4 Developing Rich Collaboration Tools									
2.5 Increasing Staff Effectiveness & Efficiency through Technology									
2.6 Developing Web Infrastructure									
2.7 Improving the IT Service Model									
3.1 Libraries									
3.2 ISIS Integration									
3.3 Partnering with Facilities Management: Construction & Sustainability									
3.4 Housing & Dining Services									
4.1 Engaged Governance and Budget									
4.2 Developing Strategic Communications									
Total theme occurs out of 16 reports	5	4	7	10	10	7	6	7	11

