Information Technology Plan

Interchange 2007 – 2010

A need to interact …

A plan for change

Office of the Vice-Provost Information Technology

– March 2007 –
**Version 2.0**

**Note to readers**: This version of the IT Plan is the second complete working draft. It does incorporate a large number of the suggestions that we have already received on Versions 1.5 and 1.6 of the plan. To date the IT Plan has received input from:

- IT Committee
- Faculty-based ICT Committee
- Several Deans or a representative group in certain Faculties
- AIS (Administrative Information Systems) group
- AISSC Executive Committee
- AICT Executive and AICT Managed Services Group
- Vice-Provost committee
- TLAT Planning Subcommittee

Because of its broad implications and impact, during the month of April the IT Plan will be presented and discussed at several committees including: Dean’s Council, PACC and others. After receiving feedback from this process, a final draft (Version 3), will be presented to SIG and EPC for administrative approval and CLE and GFC Executive Committee for GFC review.

Comments and suggestions regarding the plan can be made by completing an on-line questionnaire at: [www.vpit.ualberta.ca/planning/feedback.php](http://www.vpit.ualberta.ca/planning/feedback.php) or by emailing the VPIT Office directly at vpit@ualberta.ca.
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Acronyms:

There are many acronyms used in this report mostly for the names of committees. The following list defines them and, where possible, provides a website where more details can be found:

ACI – Alberta Cyberinfrastructure for Innovation (www.netera.ca/ci/)
AICT – Academic Information and Communication Technologies (www.ualberta.ca/ICT/)
AIS – Administrative Information Systems (www.ualberta.ca/~ais/)
AISSC – Administrative Information System Steering Committee
(www.ais.ualberta.ca/nav01.cfm?nav01=11322)
AISSC Exec – AISSC Executive Committee (www.ais.ualberta.ca/nav01.cfm?nav01=11322)
CLE – Committee on the Learning Environment
(www.uofaweb.ualberta.ca/gfcpolicymanual/content.cfm?ID_page=38770)
EDMWG – Electronic Document Management Working Group (www.vpit.ualberta.ca/edmwg/)
EPC – Executive Planning Committee
(www.ualberta.ca/~univhall/vp/vpa/Committees&TaskForces/ROSC.pdf)
FB ICT Committee – Faculty-based Information and Communications Technology Committee
(www.vpit.ualberta.ca/aict/fbict/)
ITC – Information Technology Committee (www.vpit.ualberta.ca/itc/)
SIG – Strategic Initiatives Group
(www.ualberta.ca/~univhall/vp/vpa/Committees&TaskForces/ROSC.pdf)
TELSAC - Technology Enhanced Learning Spaces Advisory Committee (a subcommittee of FB ICT Committee)
TLAT Council – Teaching, Learning and Technology Council
(www.uofaweb.ualberta.ca/provost/tlat.cfm)
UTS – University Teaching Services (www.ualberta.ca/~uts/)
Vice-Provost Committee – An advisory committee to the Provost consisting of all Vice-Provosts
VP(F&A) – Vice-President (Finance & Administration) (www.uofaweb.ualberta.ca/vpfinance/)
VP(F&O) – Vice-President (Facilities & Operations) (www.uofaweb.ualberta.ca/vpfacilities/)
VPIT – Vice-Provost (Information Technology) (www.vpit.ualberta.ca/)
Executive Summary

Interchange 2007-2010 is the University’s first Information Technology (IT) Plan in over 15 years. Developing such a plan is not easy to do. It requires an appreciation of the increasingly critical role IT plays in all the important activities of the University: our teaching, learning, research, innovation, administration, community involvement and outreach. Because of its broad use, planning for IT requires broad consultation; something we definitely pursued in our plan development. This consultation helped to define the purpose and a set of principles used in developing the plan as described in Sections 1 and 2. The IT Plan needs to support the University’s vision, captured in Dare to Discover, and the response to this vision - the academic plan Dare to Deliver. The plan accomplishes this through the deployment of several new or enhanced services as outlined in Section 3. An IT Plan must also address the challenges of sustaining and improving on existing services given the growing demand for these services and the new opportunities provided by rapid technological advancements. Over twenty plan actions dealing with sustaining and improving IT services are identified in Section 4. The alignment of our plan actions with services and a plan action scorecard for tracking the implementation of the plan are presented in Section 5. The plan concludes with a discussion of the future steps and associated timeline needed to implement the recommendations.

Normally an Executive Summary includes the major recommendations of the report. In this case, the major recommendations are embodied throughout the document in the form of thirty plan actions in which the lead will be initiated by the Office of the Vice Provost (Information Technology).

Since all thirty plan actions can be found in a relatively concise scorecard format in Appendix A, they are not repeated here. Instead, we provide a vision of some of the important outcomes that will result from implementing the major recommendations of the report. If the recommendations of this report are implemented we will:

- Embrace a Teaching-Learning Initiative that promotes Discovery Learning and transform our approach to teaching, learning and the appropriate use of technology
- Create a new cyberinfrastructure utility service supporting the needs of our researchers in areas such as high performance computing, sustainable research databases, immersive user-interface environments, and sensor-based networks
- Support new ways for students to interact with their professors, their classmates and their learning materials using approaches involving simulations, model building, gaming and social computing (blogs, wikis, podcasting and response systems)
- Embark on a community building exercise, supported by communication technology, that promotes life-long learning, better cultural awareness, international exchanges, and communities of learners and practice
- Plan for and build future learning spaces that support active and blended learning approaches
• Refresh our web presence to better engage and inform future students and other community stakeholders about who we are and why they should be excited to come to or connect to the University of Alberta
• Promote more reliable, accessible and maintainable information dissemination through an integrated document and record management strategy
• Improve substantially our ability to manage systems securely and to protect the privacy of individuals through the deployment of federated identity management services
• Allow University healthcare students and staff to transparently and simultaneously work in a highly secure hospital IT environment and a more open University IT environment
• Develop and implement a funding support model that allows for the sustainability of key IT services at the University
• More fully leverage the advantages of our integrated administrative application systems in providing new operational efficiencies, more flexible reporting, and new mobile and/or sensor-based applications and services
• Recover from and return to critical business operations within 48 hours should a major disaster affect our computing and communications infrastructure
• Ensure all students are provided with the opportunity to develop adequate information literacy skills to succeed in their University program
• Recognize and adapt to the reality that the University is no longer an organization that predominantly operates from 8:30AM to 4:30PM
• Undertake and act upon a process of service alignment that will result in more efficient and effective deployment of IT systems, services and personnel
• Provide exceptional institutional orientation, support and training for our faculty to properly prepare them for the changes needed to embrace Discovery Learning and to feel comfortable with the use of learning technologies
• Make service planning, evaluation and quality improvement part of the University’s IT culture

This is a high-level strategic document and, as such, does not layout a detailed set of approaches (including budget requirements) for deploying particular technologies. Instead, another series of documents entitled IT Strategy 20xx will describe the operational technological directions and fiscal requirements for carrying out the IT Plan on an annual basis.

The IT Plan is subtitled Interchange 2007-2010 to express the interchange of goals, ideas, and opportunities resulting from the many discussions and written feedback received on this plan from a wide variety of University constituents. Interchange is a composite of the preface inter and the word change. We use these elements as reminders of the two major themes of this plan: the transition from the information age to the “interaction age” that is upon us and the resulting “sea change” effect we are now beginning to experience in higher education.
 PURPOSE

This Information Technology (IT) Plan describes a set of principles, a planning process, recommended service improvements and key measures for determining service improvements for the University of Alberta over the next four years. It is a high-level document describing how IT can support and enhance the recently approved Academic Plan entitled *Dare to Deliver*. By necessity, this plan also examines the challenges and issues we face in sustaining critical existing IT services many of which are counted upon as much as our physical support services like heat, electricity and water.

This is a high-level strategic document and, as such, does not layout a detailed set of approaches for deploying particular technologies. Instead, another series of documents entitled *IT Strategy 20xx* will describe the operational technological directions for carrying out the IT Plan on an annual basis.

 PLANNING PRINCIPLES

This plan is based on the following principles:

1. It will respond to the priorities established in the Academic Plan, *Dare to Deliver*.
2. It will respond to the ongoing management issues and operational challenges in deploying IT effectively and efficiently across our academy.
3. It will be shaped by the values, vision, mission statements as well as the four cornerstones of a great university found in *Dare to Discover*.
4. It will seek to define a clear alignment of how IT can be deployed in the academy given the distributed and collegial governance structure of the University.
5. It will recognize the need for a service-oriented approach to the planning, deployment and sustainability of IT.
6. It will anticipate the continued, and in some areas substantial, growth in the use of IT in support of all of the University’s operations: teaching, learning, research, innovation, administration and community outreach.
7. It will support the premise that effective planning for IT is a continuous process, not an occasional or one-time endeavor.
8. It recognizes the distributed nature of IT across the University but will take an integrated approach towards planning (i.e. it will support an integrated/distributed IT model).
9. It will be inclusive to all members of the University including those with disabilities.

The first two principles are addressed in Sections 3 and 4 of the plan respectively. Section 3 responds to the four major components of *Dare to Deliver*: Discovery Learning, Incubating Scholarship, Community Engagement and Building the Transformative Organization. Section 4 provides a framework for addressing the major management issues and operational challenges in deploying IT across the academy now and in the foreseeable future. Principles 3 through 6 are applied throughout Sections 3 and 4 and are
supported in the series of planning recommendations that are developed. Finally principle 7 is addressed in Section 5, which describes a scorecard approach for tracking our IT Plan over future years.

3 SUPPORTING OUR VISION AND THE ACADEMIC PLAN

A vision process led by President Samarasekera and undertaken by the University created Dare to Discover and resulted in a community expression of our plan to achieve greatness that builds on the four cornerstones:

- Talented People;
- Learning, Discovery, and Citizenship;
- Connecting Communities;
- Transformative Organization and Support.

Information technology with its significant and growing impact on how we plan and operate can, indeed must, support these cornerstones if we are to reach our goal of being one the world’s great universities. Is there a vision for information technology that can complement and lend strength to the University’s vision? This section and the section to follow provide many actions that are strategic in nature and will take us on a planning path that addresses the challenges of our academic plan and the need to sustain and enhance our IT infrastructure over the coming four years. If we are to think more long-term and truly visionary, one theme and two elements emerge. The theme is that we are moving from the information age, which focuses on delivering and accessing information, towards the “interaction age” of learning and discovery in which information is not only accessible but is something with which, and by which, students can interact. Two elements emerging from this vision are: the need to support new patterns of information access to enhance discovery and learning by our students through interaction, and the need to provide tools and understanding for our faculty and staff on how to promote discovery and learning opportunities emerging through interaction. More will be said about these elements throughout the remainder of the document; several plan actions (#1, #4, #18, #19, #20 and #21) will be directly relevant to these visionary elements.

The Academic Plan Dare to Deliver, which responds to Dare to Discover, challenges the University in two ways: to move forward aggressively by leveraging many of its existing strengths and to contemplate and act on new approaches to accomplishing its mission of becoming a great university. Both approaches will, by necessity, require more and different uses of information technology. The remainder of this section presents various plan actions that can assist in the four major components of Dare to Deliver.

3.1 Discovery Learning

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The most significant recommendation of the Academic Plan is to hire 500 new professors with appropriate support. The primary motivation for this recommendation is to reduce the student to faculty ratio, thereby resulting in a better teaching and learning environment at the University. Special emphasis on improving the student’s first year experience is also noted. The opportunities for an improved learning environment not only includes smaller class sizes, but also the ability for instructors to adopt new approaches to support student learning. Specifically, important new interactive learning approaches involving the use of games, simulation and model building are emerging in many of our curricula. These new approaches, couched in the term Discovery Learning, require more extensive use of existing or new e-learning tools and support. The important issues related to e-learning adoption and support for the University were recently examined in the E-Learning Report 2005: A Foundation for Transformation. A re-examination of these is undertaken later in Section 4.10 of this report. Specific recommendations in the Discovery Learning section of the Academic Plan related to teaching, learning and technology point to the key elements of what is now called the Teaching-Learning Initiative. This initiative, which supports an integrated view of teaching and learning with appropriate technology, forms the basis for our first plan action.

Plan Action #1: Additional IT resources for both central services and faculty-based support are needed to fulfill the commitment to Discovery Learning defined in the Academic Plan. The nature and extent of these resources will be framed by the Teaching-Learning Initiative and determined over time through consultation with the TLAT Council and TELSAC (Technology Enhanced Learning Spaces Advisory Committee).

Specific initiatives now underway in support of this plan action include the new Teaching Learning Enhancement Fund (TLEF), the formation of the Teaching Learning and Technology (TLAT) Council, the Teaching with Technology program, and the transformation of the Telus Building to an academic facility housing a future Teaching-Learning Institute with associated programs supported by UTS (University Teaching Services) and the E-Learning Group of AICT (Academic Information and Communication Technologies).

In addition to hiring 500 professors, other Academic Plan elements of Discovery Learning include: exploring effective practices in teaching and learning; community service learning; early-year cornerstone classes; implementing writing instruction across the curriculum; and virtual communities of learning and practice. The role of IT in support of these initiatives will be explored through the TLAT Council, and informed through TLEF projects, other special initiatives such as TTI (Teaching with Technology Initiative) and the eventual formation of a Teaching-Learning Institute.

3.2 Incubating Scholarship

During the past decade, the University of Alberta has grown into a research powerhouse establishing it as one of the top three or four institutions in Canada. Incubating scholarship asks us to leverage this research intensity in several ways including: attractive
recruitment packages for PhD students, the creation of a prestigious international-level fellowship program, greater interdisciplinary collaboration and research teams, the support for and promotion of “time-to-think” opportunities for faculty and research groups, and the promotion of innovative joint appointments with collaborative institutes and organizations. Information technology can play a significant role in the incubation of scholarship by providing excellent support for research activities through what is now commonly referred to as cyberinfrastructure. Key components of cyberinfrastructure include responsive and effective access to:

- high-performance computation for modeling and simulation,
- high-performance research networks to support transparent sharing of computational and data storage resources using grid technology,
- secure and well-managed research databases,
- immersive and collaborative visualization environments, and
- sensor-based networks for the ongoing monitoring of research experiments.

Working with the other Alberta Universities, the provincial government as well as other research agencies, the University is in the process of developing enhanced and sustainable cyberinfrastructure support through a new entity called Alberta Cyberinfrastructure for Innovation (ACI). When ACI’s Strategic Plan (www.netera.ca/ci/downloads/ACIStratPlan.pdf) is fully implemented, University of Alberta researchers will have access to the very best IT infrastructure support in Canada. The creation of this infrastructure will help attract excellent PhD students and international fellows, better support interdisciplinary collaborations, provide more time to think by requiring less time to acquire the necessary IT infrastructure, and promote greater opportunities to collaborate with others outside the walls of our institution. The plan action already underway follows.

**Plan Action #2:** The University, working in collaboration with the other key Alberta stakeholders, will take the lead in the creation of sustainable and enhanced cyberinfrastructure through the formation of ACI.

### 3.3 Community Engagement Near and Far

As stated in the *Dare to Deliver*, community engagement involves two aspects, one externally focused and one internally focused. External engagement includes better connections internationally, as prescribed in *Connecting with the World*, and across Alberta and the North through better rural and Aboriginal engagement. Improved internal engagement will be promoted through: greater cohesiveness across our five campuses; increased awareness of cultural sensitivity and improved cultural literacy; the creation of well-managed and exciting transitions for our students and other visitors joining, moving through and leaving our community; and support for our faculty and staff through several career enhancing initiatives. IT can foster external community engagement initiatives by complementing face-to-face engagement with virtual connectivity through videoconference along with other communications and learning tools. These same tools can also enable educational, research and administrative communication through online courses and seminars, workshops and presentations delivered at a distance not only to our
Augustana and Saint Jean Campuses, but other college campuses across Alberta and beyond. The traditional barriers for these types of communication, ease of use and cost, are dropping dramatically. The following plan action is both desirable and achievable.

*Plan Action #3: The University will create a plan for the development of Alberta U Communication Portals, a series of rooms and other spaces that will be developed to promote the use of videoconferencing and other communications technologies to support the University’s plan of connecting with communities both near and far.*

Community building can also be promoted through other forms of new, emerging IT services, in particular, several forms of social software that are being incorporated as part of Web 2.0\(^2\) (the *semantic web*) capabilities and standards. The use of discussion rooms, wikis, blogs and other social networking software are becoming commonplace and the choice of interaction by many of our incoming students. These communications styles can facilitate better cultural awareness and literacy, sustainability of international exchanges, international courses and seminars, communities of learners and practice, lifelong learning opportunities, and better connectedness with our alumni and greater community. These new forms of software can also foster innovative approaches to other community support activities such as just-in-time training, and enhanced professional development opportunities.

*Plan Action #4: The University will establish an initiative to investigate on an ongoing basis and, as appropriate, invest in and promote social networking software that recognizes modern communication styles preferred by students and supports the University’s plan for connecting with communities both near and far.*

### 3.4 Building the Transformative Organization

The final area of commitment in *Dare to Deliver* identifies a need to build a transformative organization. In order to succeed in becoming a Great University we need to examine how we currently operate as an institution and, where appropriate, identify and plan for new ways of doing things. As stated in the plan, *Our new initiatives will require effective internal and external communication, environmentally sound physical space and refurbished facilities that can respond to the rapidity of disciplinary and interdisciplinary developments.* Finding a proper balance between central and decentralized resources also is identified as a critical undertaking.

Two activities recognized as part of building a transformative organization that are most pertinent to IT planning included: excellent use of space and improved information exchange on key university initiatives and decisions.

Without question the availability of excellent (purpose-built) space for our faculties or units contributes significantly to the success of those units in meeting their goals and the

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\(^2\) From wikipedia: [Web 2.0](https://en.wikipedia.org/wiki/Web_2.0), a phrase coined by [O'Reilly Media](https://en.wikipedia.org/wiki/O'Reilly_Media) in 2004[^1], refers to a supposed second generation of Internet-based services—such as [social networking sites](https://en.wikipedia.org/wiki/Social_networking), [wikis](https://en.wikipedia.org/wiki/Wiki), communication tools, and [folksonomies](https://en.wikipedia.org/wiki/Folksonomy)—that emphasize online collaboration and sharing among users.
overall goals of our institution. Recent space projects have had significant impact due to their large, interdisciplinary and multidisciplinary nature (e.g., NINT, Health Research Innovation Facility, Centennial Centre for Interdisciplinary Science and Edmonton Clinic). Increasingly, planners are recognizing that planning space in these buildings and in other major renovations requires significantly more attention to the use of IT.

At present, IT requirements are gathered during needs assessment and functional program development, but in many situations the IT specialists needed to validate these requirements are not consulted until the final stages of the space plan. It is particularly critical that IT requirements for smart classrooms, computing labs, open learning areas and research IT infrastructure be identified and verified during the early stages of planning and consultation with government. As we look to the future, planners will benefit from considering ways to blend online instruction with face-to-face instruction to reduce the pressure on classroom space. On the other hand, it is critical to realize that face-to-face Discovery Learning will typically require more flexible learning spaces in the future. Early stage IT requirements will also help identify the costs early on so they are incorporated into the cost of the building project, which they are not at present.

Finally, policies and procedures will be developed related to the common space use for servers to ensure best practices are followed with respect to proper air conditioning, ventilation, electrical power, connectivity and secure physical access.

There is still more work to do in terms of accommodating IT when determining space requirements. Management practices that will accomplish this work are embodied in the following plan action, which has three components.

**Plan Action #5: Planning for IT infrastructure in support of new or significantly enhanced space should incorporate the following improved practices:**

- **a)** Planning for IT should be formally incorporated as a step in space plan development and Capital Planning.
- **b)** The initial costs for new or renovated space should identify the costs of IT at the time the building project is approved.
- **c)** In developing any new or renovated space, space requirements for housing file or compute servers should be met, whenever possible, from existing common server room or computing centre spaces. Only under exceptional circumstances should one-off server room space be developed.

The need for improved information exchange on key University initiatives and decisions is critical in building a transformed organization. Information exchange can be significantly enhanced with the availability of new and better IT tools and practices for managing information.

Perhaps the most obvious example of this is the web, which is now the primary communication tool for our University to convey its message to the community and beyond. Our current web presence has changed little in the past four years and is now in need of a planned upgrade to accommodate more dynamic functionality that is possible today. A project, jointly sponsored by the Vice-President (External) and the Vice-Provost
(IT), is now planning a new web presence for the University. As part of the vision of becoming a Great University, the President wants and needs a world-class website that will excite and engage people throughout the world. The revamped website needs to express the character of our institution and represent our voice to the world. The following plan action is aimed at ensuring that the right architecture and technology will be acquired to support a much more dynamic, market-oriented site to enable the University to compete with the major universities in North America.

**Plan Action #6:** A new web presence will be developed for the University to assist in promoting more effective and consistent communication of the University’s initiatives and decisions and to better connect to our key stakeholders near and far. All major University units will be strongly encouraged to adopt the common format of the web presence that will be created.

At present, the University does not support very well the storage and management of electronic documents. UAPPOL (University of Alberta Policy and Procedures On-Line) is currently the only e-document application that is supported by a document management system, Stellent. FGSR (Faculty of Graduate Studies and Research) is just beginning to pilot an electronic document management system, Microdea, for assisting in handling many of its transcript and letters of recommendation associated with graduate student applications. This pilot will grow to include some use by the Registrar’s Office, followed by a further pilot study involving Human Resources. At the end of this stage (approximately May 2008), an integrated electronic document management strategy will emerge as summarized in the following plan action.

The University Library currently deploys DSpace, an open source digital repository system that captures, stores, indexes, preserves, and distributes digital research material such as thesis and research papers. DSpace (www.dspace.org) is gaining popularity as a standard digital repository archive that is available worldwide. Ideally, a chosen electronic document management system would integrate with DSpace and support open access to all research papers published at the University.

**Plan Action #7:** An integrated electronic document management strategy and associated service will be developed for the University to aid in more reliable, accessible and maintainable information dissemination across the University.

The remaining initiatives under Building a Transformative Organization that can be supported by IT include: allowing more flexible student recruiting and admitting; providing staff with sufficient training; flexible and reliable IT systems; implementing a Research Ethics Board (REB) database; evaluating the utility of a common Curriculum Vitae (CV) database; and integrating and balancing generic central services with faculty or discipline-specific support. Each of these topics will be addressed with plan actions in Section 4 under the following subsections entitled, Administrative/ERP/Information Systems, Faculty and Staff Development, Support, and Training, and Governance, Organization, and Leadership.
MANAGING IT ISSUES AND CHALLENGES

This section of the IT Plan focuses on the management of major IT issues and challenges facing our University today and the foreseeable future. The list of issues addressed in this section is extensive, but not exhaustive. It includes the Top-10 IT Issues, as uncovered by EDUCAUSE Current Issues Committee in their annual survey of University CIOs across North America (www.educause.edu/ir/library/pdf/erm0633.pdf). We have referenced the Top-10 by placing the issue priority ranking in square brackets after the subsection title.

The plan actions developed in this section are of two types: those actions required to sustain IT support in a climate of growth in use and rapid technological change, and those actions that anticipate new or improved service opportunities.

4.1 Security and Identity Management [rank = 1]

Managing security and identity management has been a growing issue for much of the past decade and was selected as the top issue in the 2006 EDUCAUSE survey. Our University, like most universities today, faces the challenge of developing policies, procedures and system support that balances the need to provide expanded and open information access against the need to protect information from unauthorized or malicious use – typically accomplished through viruses, spyware, phishing attacks and deliberate attempts at electronic break-ins.

Oversight for information systems security management is the responsibility of the Office of Information Systems Security (www.ualberta.ca/AICT/OISS) in AICT. Administrative information systems policies and procedures are developed and reviewed by the Administrative Information Systems (AIS) Security Committee. Both our academic and administrative systems are subject to security audits on an almost annual basis. Existing policies and procedures are regularly reviewed and an effort is currently underway to place our AIS and academic computing security procedures under a single UAPPOL policy addressing access and usage. Several issues relating to security and identity management need attention over the coming four to five years. The remainder of this section captures most of these through three important plan actions.

The first is addressed through the provisioning of Identity Management Services. The concept behind Identity Management Services is quite simple: in the words of Scott McNeally, Chairman of Sun Microsystems, it is about identifying who is who, what is what and who gets access to what.3 The University, under the direction of AICT and in cooperation with AIS, has made significant progress in the past year towards the creation of a single sign on capability using the CCID (Campus Computer ID). A new project entitled the IMS (Identity Management Service) Project has been launched in AICT under the sponsorship of the Vice-Provost (IT). The first phase focuses on a proof of concept to confirm the IMS architecture. The second phase will see the development of a

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basic portal that will permit students and staff access to a variety of standard services (e.g., library, webmail, WebCT, and possibly Peoplesoft self-service through Beartracks). The eventual completion of a mature IMS may well take two to three years to develop. This service, identified in the following plan action, will be extended over time to work in conjunction with other identity management systems being developed by partner agencies such as Capital Health, other universities and colleges in Alberta through APAS (Alberta Post-Secondary Application System), and other universities across Canada through a common identity management system (CIMS).

**Plan Action #8:** The University will develop a new Identity Management Service (IMS) that provides a mature authentication and authorization scheme to enable the enforcement of access rights to digital resources and information services for a wide variety of staff and student roles.

Closely related to issues of security are issues of privacy and in particular identity theft. With a growing demand to work with other agencies as part of outsourcing arrangements, it is possible we will see the storage of University information in non-University managed computers. The possibility of such an arrangement leads to another plan action.

**Plan Action #9:** The University needs to develop clear privacy and security policies related to the management of and access to University information of a personal nature on computers managed by other parties.

Again, a federated identity management services appears to be a systematic solution to such problem. In the USA, many universities have joined a trusted federated identity management consortium called InCommon (www.incommonfederation.org), in which vendors can authenticate whether a person is a member of a university without having to store personal information about that person.

Several policies and procedures for security exist for both academic and administrative systems. These need to be merged under one policy framework under UAPPOL and aligned with existing privacy policies and procedures formulated by the University’s Privacy Office.

The following plan action captures a critical need for the health sciences sector of our University to access health care records for educational and research purposes.

**Plan Action #10:** Working together with Capital Health and other healthcare authorities in the province, the University must support agreed upon network access protocols that will allow University healthcare students and staff to transparently and simultaneously work in a highly secure hospital environment and a more open University environment in which they undertake their teaching and research activities.

The University is currently working with Capital Health to develop this type of user access support.
4.2 Funding IT [2]

For many years, funding IT has been the most challenging management issue in the EDUCAUSE survey. A practical example of this issue can be found in meeting the IT demands arising from the first recommendation of the Academic Plan: hiring 500 new professors over the next five years. Implications of this recommendation are far-reaching and apply not only to teaching and learning activities (i.e., reduction of the student to faculty ratio to 15:1) but to research and community service. Even though our current needs are not being fully met, additional and new types of IT resources will be required to support this huge increase in human resources. The question of how much new IT investment is needed is an important one that we are not well equipped to answer at present. IT support is provided both centrally and in the faculties. Although our Office of the Vice-Provost (IT) has made significant progress in the past two years at developing a consolidated University IT budget, we still do not know the total cost of IT and can not provide a figure such as the average IT support costs per faculty member. To base future budget decisions on one such measure would likely be misleading, but it would nevertheless provide an important input to budget decisions in response to the extensive planned increase in the size of our academy.

Plan Action #11: To aid in decision making related to the level of funding to support the planned increase of new professors with appropriate support, the Office of the Vice-Provost (IT) will develop by September 2007 a financial model to determine the total cost of IT infrastructure and support for the University. This financial model should be revisited on an annual basis through the duration of the academic plan (i.e., until 2010).

Unquestionably the development of this financial model will be a challenge as the IT requirements can vary significantly from discipline to discipline, even from professor to professor.

The EDUCAUSE report also cites the following four practices that facilitate successful IT funding efforts:

- Aligning funding and institutional priorities
- Creating fiscal flexibility to support innovation
- Constructing and facilitating a structured and transparent IT budget process
- Making the CIO a member of the institution’s cabinet and budget committee

Since creating the Office of the Vice-Provost (IT) in July 2004, the University has made significant strides in adopting all four practices. The creation of the Academic Plan and the subsequent development of this IT Plan supports the first practice. The creation of a consolidated (virtual) IT Budget process (www.vpit.ualberta.ca/budgeting) has made the IT budget process more structured and transparent and allowed for innovation in areas such as e-learning (e.g., purchasing Elluminate, the Teaching with Technology Initiative, refreshing the equipment in the Telus Building). The Vice-Provost now participates more extensively in budget committee decisions, however is not a member of the institution’s cabinet (i.e. the Executive Planning Committee).
Greater alignment of budget allocations with service needs is required and further investment in IT systems sustainability is required. The budget implications of these items are later in this report in the sections dealing with service delivery and infrastructure support.

4.3 Administrative/ERP/Information Systems [3]

The University’s central Oracle-PeopleSoft Enterprise Resource Planning (ERP) systems have improved substantially from the early implementations in the year 2000. Over the next five years, they must be further improved in terms of their functionality, performance, responsiveness, and reliability. Oracle will be moving to a new ERP software platform, a middleware framework called Fusion,\(^4\) in the next three years. To prepare for a possible move to Fusion, the University will need to upgrade its current financial, student, human resources and research accounting systems to Version 8.9 or 9.0 of PeopleSoft to be able to migrate to the Fusion framework in four to five years. It is distressing that we seem to be at the mercy of Oracle’s product development strategy, at least for the next five to ten years. The good news is that Fusion is based on a Services-Oriented Architecture approach that should allow for better customization for improved performance, integration across platforms, and enhanced functionality in the systems that are delivered. A plan action is required to ensure that we properly monitor and analyze our future options in ERP development. This analysis should include costs of licensing, training, and any necessary changes in platform for the conversion to Fusion.

*Plan Action #12:* Beginning this year 2007, AIS (Administrative Information Systems) should undertake an annual review of the product strategy for the Oracle-PeopleSoft ERP to determine when and if it is feasible to move to the proposed Fusion platform. If appropriate, tracking of alternative platforms, such as new open source ERP platforms, should also be undertaken.

Greater strategic thinking and change management planning are needed to take advantage of the new services that will be supported by Fusion’s Services-Oriented Architecture. Strategies will include more and better training for existing administrative staff, hiring new support staff with significant information literacy skills, and embracing new ways of operating that include a greater emphasis on self-service and workflow. The net result should be services that better meet our information needs including more flexible and analytical reporting through data warehousing, better information security and privacy, and more customizable and readily understood portal-style user interfaces.

Transactional processing in many of our PeopleSoft administrative information systems can be significantly enhanced in terms of ease, accuracy and distribution of data capture by using *smart form* interfaces. These are interfaces that are web-based and typically supported by wizards\(^5\). The first area we are deploying smart forms in a significant way


is in the human resource services area. With this approach, the entry and modification of staff information related to hiring, termination and job changes will be sensitive to the job type. The approval process associated with changes to job status will also be streamlined using work lists and other forms of workflow improvements. Smart forms promise more efficient IT processes as well as more accurate and complete data creation and management than provided in our current systems.

**Plan Action #13**: The introduction of smart forms will affect quite dramatically how we carry out business transactions in the University. The overall effect will undoubtedly be positive, but the impact of this change must be properly managed. It is recommended that AIS begin planning for ways to address change management in this area and that the need for a change management officer position be assessed and, if required, funding for such a position be requested in future budgets. The University must seek to address the challenges of change management more broadly. A cooperative strategy involving AIS but lead by Human Resources should be initiated.

While many of our PeopleSoft applications provide good transactional support for our business areas, the reporting capabilities do not meet our needs quite so well. The lack of good reporting has undoubtedly contributed to the continued existence of several redundant administrative shadow systems. Such systems are both inefficient and, as pointed out by our auditors, risky because the shadow system may not have correct or up-to-date information. We also need innovative approaches for getting more out of our data through data warehousing (also sometimes called Business Intelligent) approaches for building analytical models that can display and in some cases even discover interesting relationships between data. For example, suppose we wanted to find out if the number of rural students entering a particular faculty (e.g. Medicine and Dentistry) is in the same proportion as the overall participation rate of rural students in our post secondary system. Developing a report like this could be quite difficult and time consuming using our existing reporting systems. More flexible reporting will be possible if we deploy data warehousing capabilities with associated analytical report services to campus units and departments. This type of reporting is needed and will become critical over the next two to three years. Unfortunately Oracle and several other vendors recommend not to implement data warehousing in PeopleSoft until Fusion becomes available.

**Plan Action #14**: The University must plan to invest in data warehousing capabilities that are compatible with our existing ERP system ideally over the next two to three years. A full data warehousing capability will require significant long-term investment.

A number of new or enhanced services are being developed that must make use of our core ERP information. The table below illustrates this demand.

<table>
<thead>
<tr>
<th>Core ERP information</th>
<th>New or enhanced information service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student</td>
<td>WebCT, Blackboard, Elluminate</td>
</tr>
<tr>
<td></td>
<td>Identity Management Services, new OneCard</td>
</tr>
<tr>
<td></td>
<td>Parking, BSR (Advancement Services)</td>
</tr>
</tbody>
</table>

12/5/2007
Typically, these auxiliary services download authoritative information from the core PeopleSoft ERP databases in order to get accurate data about a student, staff member, a financial transaction, or the state of an account. On occasions, it is also desirable to have these applications upload information to our ERP databases. Significant effort is needed to ensure that functionally correct, secure interfaces are built between the core ERP data and these auxiliary application services. Two good examples of this type of connectedness relate to our student information system (Oasis) and WebCT. An interface has been written to download student registration lists from Oasis in order to create class lists in WebCT. At the end of term, it should be possible to upload a student’s grade for a course from WebCT to a student’s record of marks in Oasis – this latter function is being developed at present. This leads to the following important plan action.

**Plan Action #15:** In addition to finding funds to add more functionality in support of our core ERP information services, significant additional funding will be required to build special interfaces to provide connectedness to new and enhanced auxiliary service systems. Estimates of the costs of building and maintaining these interfaces should be determined and included in the total project costs at the time the new or enhanced auxiliary service is planned.

### 4.4 Disaster Recovery/Business Continuity [4]

One of the major IT liabilities facing the University is the lack of disaster recovery capability for our administrative and centrally-supported academic information systems. For the past several years, the Auditor General of Alberta has consistently recommended this risk be addressed. In recent months, progress was achieved towards the goal of having full-scale disaster recovery for these systems.

Currently AICT stores all their backup tapes either in their main server room in General Services Building (GSB), or in adjacent facilities. A new server room to be located in Enterprise Square is planned for completion by January 2008 at an estimated cost of $3.2M. This room will provide sufficient space for AICT to install a backup tape drive and tape library. Space will also be available for the installation of redundant servers to allow for backup to University-wide critical services maintained in GSB. This facility

<table>
<thead>
<tr>
<th>Department</th>
<th>Services/Systems</th>
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</thead>
<tbody>
<tr>
<td>Human Resources</td>
<td>Identity Management Services, new OneCard, Parking, REB (Research Ethics Board) Support, Electronic Document Management, BSR</td>
</tr>
<tr>
<td>Financial</td>
<td>EAM (Enterprise Asset Management) System, Budget Application, Parking, new OneCard</td>
</tr>
<tr>
<td>Research Accounting</td>
<td>REB (Research Ethics Board) Support, Electronic Document Management</td>
</tr>
</tbody>
</table>
will provide limited disaster recovery capability until a larger, regional data centre becomes operational.

AICT released a plan in October 2006 that describes procedures for disaster recovery and rapid recovery of the University’s critical systems from a secondary computing centre. The plan was recently revised in March 2007. This plan defines the order of services to be restored in the event of a major incident and the recovery steps to be taken for full restoration of all campus-wide IT services. In addition, the plan details the requirements of a secondary centre that would meet the University’s requirements and proposes a conceptual layout for this facility.

During the past year a project to define the requirements for a Disaster Recovery Centre was initiated by the VPIT Office. This project was later expanded in scope to a northern Alberta regional disaster recovery centre that would encompass the shared requirements of between twelve to sixteen northern Alberta post-secondary institutions. A presentation of the results of this report was made to the provincial government and follow up on this report is currently underway.

In 2000, the University of Alberta’s administrative information systems were outsourced to IBM Global Services. This outsourcing arrangement was renewed in 2005 and, as part of the new contract, the University agreed to have IBM host all hardware supporting our administrative systems in their data centre at Markham, Ontario. Although this relocation eliminated the risk of data loss in the event of a disaster in Edmonton, it created a new risk with a disaster in Markham. Currently the University is exploring options with IBM on our administrative information systems disaster recovery.

The flowing composite plan action summarizes the activities planned for Disaster Recovery in the 2007 – 2010 period.

**Plan Action #16: The following activities will be pursued to address outstanding shortcomings in IT Disaster Recovery:**

a) AICT will revise its Disaster Recovery Plan and submit this plan for review and implementation.

b) The business case for a regional disaster recovery centre should be completed and submitted to the University for review and approval to proceed with planning. Planning would be completed on a regional basis and, if consensus on a regional disaster recovery centre development can be reached, the associated plan would be submitted to the government for possible funding.

c) In order to mitigate the risk of a two to three month business failure, the University, working in coordination with our managed services vendor IBM Global Services, will define and deploy a disaster recovery strategy for our administrative information systems in the planning period.

Disaster Recovery is just one aspect, although an important one, of business continuity planning. Special IT concerns related to business continuity in the aftermath of a disaster include:
• the availability of an associated communications and control plan,
• too much reliance on wireless and cellular communication (which often get overloaded in a crisis),
• a tracking/location system for faculty, staff and students, and
• the connectivity to the emergency response team. Fortunately, the University has recently hired a Business Continuity Coordinator (Les Brinkworth) who can assist in business continuity planning.

The following plan action places our efforts in disaster recovery within the context of a complete Business Continuity Plan.

Plan Action #17: A coordinated review of business continuity issues that can arise as a result of a major outage or disaster should be undertaken by the Leader, Emergency Preparedness and Business Continuity and the Vice-Provost (IT) office in the near future. The goal of the review is to have an emergency preparedness and business continuity plan for AICT that is a component of the University's overall Integrated Emergency Management Program.

4.5 Faculty and Staff Development, Support, and Training [5]

The EDUCAUSE Report focuses primarily on issues related to faculty development, support and training. Most of the identified areas of concern related to the teaching and learning environment: specifically, the pace of change of collaboration tools, the impact of mobile computing and podcasting, and the issue of intellectual property in the area of instructional technology. In discussions providing input to this report, several Deans identified the need to better support faculty in understanding how technology can be used more effectively in teaching and learning.

Faculty and support staff have noted that, at present, there is no agreed upon base or minimum standard for the desktop equipment needed to accomplish their jobs or a policy on how often this equipment should be refreshed. In the current distributed model of IT support, desktop renewal is the responsibility at the department or faculty level. This is generally agreed to be a good strategy as it recognizes that faculty and staff members have different technical needs and equipment refresh rates. Nevertheless, asking each department or faculty to define a policy and set aside the resources to address desktop renewal would better prepare our faculty and support staff members for the tremendous changes in teaching, research and administration that are emerging. The suggestion that the University should provide each new faculty member with a laptop that contains a complete orientation package to the University has also been made. A specific plan action in this area is as follows:

Plan Action #18: UTS and the AICT E-Learning Group, working in cooperation with TLAT Council, should assess and report on the nature and type of institutional orientation, support and training needed by faculty to be properly prepared to undertake Discovery Learning initiatives involving the use of learning technologies.
Support staff will also require additional training in order to assume support roles involving the use of new information technologies. Fortunately there is already significant coordination of staff training through the Learning Shop initiative (www.learningshop.ualberta.ca), however there is very little classroom space available at the University main campus to host training sessions.

Plan Action #19: A study coordinated by the Human Resources Office, should undertake an assessment of training and support needs for support staff in the area of IT skill development. The study should focus on availability of training space, type of training required (e.g., face-to-face, hands-on, online) and recommendations to meet the identified needs.

Plan Actions #18 and #19 relate to the general challenge of change facing faculty and staff as the University explores how it will be transformed to meet the expectations of the millennial learner and to adjust to the rapid advances in the use of information technology in advanced education.

4.6 Student Development and Support
The need to provide an excellent learning environment for our students is fundamental to our University’s vision in Dare to Discover and in key elements of the academic plan Dare to Deliver. Several plan actions pertaining to the student development and support were already presented in Section 3 of this report. Foremost among these are plans to support mobile, technologically engaged students with an environment that allows them to learn by interacting with the subject material and each other. Our strategy for developing and maintaining the IT infrastructure for such an environment will be discussed in the next section.

The remainder of this section addresses the importance of ensuring that all of our current and future students can effectively and efficiently succeed in the rapidly emerging “Interaction Age” in education. The topic of information literacy received considerable discussion in the deliberation of the E-Learning Task Force. It was believed that the level of understanding and capability of incoming students to use information technology varied significantly across the academy depending on their interests and the background they received before entering university. The belief that there is a need to make available basic information literacy learning modules to all students in some part of their undergraduate program led to the following recommendation, which is repeated as an action item in this plan.

Plan Action #20: Each Faculty is strongly encouraged to ensure that students are capable of successful participation as active learners and that they have essential information literacy skills. Related educational programs and resources will incorporate active learning strategies. A University-level working group will be established to explore ways of providing core introductory instruction or resources on active learning and information literacy that would serve as a foundation for Faculty programs.

4.7 Infrastructure [6]
The need to provide sustainable IT infrastructure has grown appreciably in the past five years in the recognition and realization that all of our activities, but especially teaching, learning, research and administration, now depend on reliable, responsive and secure IT systems. Our push to develop a sustainable research IT support environment was previously discussed in Section 3.2 and a sustainable strategy was identified in Plan Action #2. The sustainability of our administrative information systems is addressed through our most recent managed services contract with IBM Global Services. The need to address new and growing services that require access to our core ERP administrative systems is identified in Plan Action #15 of Section 4.3.

In the past three years, AICT working in cooperation with the Vice-Provost (IT) Office identified the need and put forward a plan for infrastructure sustainability of academic information technology and services: including support for our e-learning environment, networks, e-mail and other shared services. The funding provided has not just focused on hardware renewal but has also recognized the rising costs of software licensing renewals and the need to purchase new licenses. Additional funding must also be identified for new innovations in teaching and discovery involving technologies such as student response systems, e-portfolios, social software (blogs, wikis) and the mobile learning. New services in areas such as wireless access, identity management, and a renewed web presence will be required to support this innovation. Prior to academic year 2005-06 funds to support the sustainability of these services were requested and found primarily on an annual basis, which provided very little opportunity for phasing in planned upgrades or investments in improved infrastructure. Over the past two years $1.5M in base funding has been allocated toward this plan. The overall infrastructure sustainability goal is captured in the following plan action. The funding to reach this goal will be reviewed on an annual basis as part of the Strategy 20xx document.

Plan Action #21: The Vice-Provost (IT) Office working in collaboration with AICT will develop a sustainability model that will support software license renewal and the planned replacement and upgrade of essential academic computing equipment on a 3 to 4 year cycle. Additional funding, based on proper justification, must also be found for innovations in support of new models of interactive learning and discovery that are emerging.

4.8 Strategic Planning [7]

This is the first University IT Plan for many (at least 15) years. Plans were not forthcoming for several reasons including: the separation of academic and administrative information systems, the strong move to decentralize IT support in the 1990s, no single person or office was given the authority or scope to develop such a plan, and the value of planning in such a dynamic environment as IT was seen to provide small value for the effort expended. In recent years, however, both the EDUCAUSE Survey and our university identified strategic planning of IT as one of the important activities that must happen in an institution and certainly in a Great University. The University’s 2002 IT Taskforce Report (www.vpit.ualberta.ca/resources/pdf/ICTTaskForceReport.pdf)
prescribed the creation of the Vice-Provost (IT) Office and IT planning as the most important activity of this office. This report represents that first major component, the start-up activity, of continuous IT planning process that will be created by the following plan action.

Plan Action #22: A process for the development of an annual strategic planning document will be created by the Vice-Provost (IT) Office and approved by the Provost and Vice-President (Finance and Administration) within 6 months of the approval of the IT Plan.

It is important to understand that this plan was not created “out of thin air” or as “a textbook exercise” – considerable consultation and input on IT planning precedes this plan development⁶. An extensive round of consultation is expected leading to the final review and approval of this document by EPC (Executive Planning Committee) and the GFC Executive Committee. It is expected that this annual strategic planning document, tentatively called IT Strategy 20xx, will both review annually our progress on the plan developed in this document and clearly state what activities are planned for the next 12 to 18 months.

4.9 Governance, Organization, and Leadership [8]

In the past three years several changes and improvements occurred with respect to IT governance and organization, due in part to changes in leadership. The TLAT (Teaching, Learning and Technology) Council, created as a result of the recommendations of the CLE Subcommittee Report on Teaching, Learning and Technology Innovation and Leadership (May 2006), now provides a University-wide forum for discussions and recommendations related to the learning environment. The following two plan actions, described in the CLE Subcommittee Report, relate to organization and governance.

Plan Action #23: The TLAT Council should review the integrated distributed model for services and support as developed in the CLE Subcommittee Report on Teaching, Learning and Technology Innovation and Leadership (May 2006). It should determine where overlaps and gaps exist in how we currently operate when compared to the model definition and make recommendations related to the operation of this model.

Plan Action #24: Because of the growing importance of IT in teaching and research, each Faculty is strongly encouraged to form an IT Planning Committee or Teaching, Learning and Technology Planning Committee that provides a forum for identifying the Faculty’s IT needs in general or the Faculty’s IT needs in support of teaching and learning.

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⁶ Input included: three campus-wide IT planning workshops, individual meetings with Deans and Directors, meeting with several faculty-based IT and/or e-learning committees, consultations with the IT Committee (an advisory committee to the Vice-Provost (IT) – www.vpit.ualberta.ca/itc), feedback from the IT Roadmap document (www.vpit.ualberta.ca/planning/roadmap), and Dare to Discover, the input documents to the Academic Plan from faculties and other units, and Dare to Deliver.
From an organizational perspective, there were significant changes in IT support of our teaching and learning environment in the past two years. ATL (Academic Technologies for Learning) was dissolved and additional resources were added to the AICT E-Learning Group. The effects of these organizational changes should be considered as part of the integrated-distributed model review in Plan Action #23.

The creation of committees for IT and learning environment planning at the faculty level are also seen as key governance instruments for better planning in support of the integrated-distributed model of services and support.

Another important governance change was the creation, in 2005, of the Faculty-Based ICT (FBICT) Committee, a committee that provides important input into service and infrastructure needs of the University as managed by AICT. Two important subcommittees of FBITC are the Technology Enhanced Learning Spaces Advisory Committee (TELSAC) and the Resource Allocation Subcommittee. These subcommittees review AICT expenditures on IT improvements for central learning spaces and IT hardware and software infrastructure for academic computing.

The following plan action identifies the need for a new governance approach in research IT services, especially as a consequence of the proposed creation of ACI.

*Plan Action #25: A cyberinfrastructure subcommittee of the Faculty-based ICT Committee should be established to provide input on the availability and quality of service provided by ACI (Alberta Cyberinfrastructure for Innovation - see Plan Action #2) when it is created.*

There were also several changes to the governance and organization of our administrative information systems in the past two years. The composition and the scope of administrative information systems considered by both the AISSC (Administrative Information Systems Steering Committee) and its Executive Committee (AISSC Exec) was broadened and changed. Final approval of these changes will be reviewed by EPC in the near future.

### 4.10 E-Learning/Distributed Teaching and Learning [9]

The 2006 EDUCAUSE survey observed that “E-Learning has emerged from its beginnings as an add-on to traditional education and has now become a mission critical component of the education environment.” This may seem obvious today in our institution; however, recognition of its mission-critical nature has really only been recognized in the past three years. *Dare to Deliver* recognizes this in its Discovery Learning commitment and Plan Action #1 provides a framework to carry out this commitment. Two more specific plan actions are needed to ensure sustainability and measured growth in support of our E-Learning Environment. The first is related to the 2005 E-Learning Plan, which contains 17 recommendations, several of which have not been fully acted upon due to lack of budget or insufficient time.
Plan Action #26: The TLAT Council should undertake a review of the E-Learning Plan 2005 to assess progress on its recommendations and refresh the plan.

The second plan action addresses the need to have an in depth look at our campus Learning Management System (LMS) strategy. An LMS review is important for two reasons: its has been four years since the last review was undertaken and the decision was made to support WebCT and, with the recent purchase of WebCT by Blackboard Inc., it is important to understand the new LMS product direction of WebCT.

Plan Action #27: The University will undertake a review of our campus-wide Learning Management System by the fall of 2008. The review should take into account a wide variety of factors; however, three important factors include the requirement to support our existing investment in course materials; the need to support Discovery Learning as defined in the Academic Plan; and the desire for a common knowledge management capability that supports both teaching and research and the integration of these activities.

4.11 Web Systems and Services [10]

An overarching goal in all of our information systems is to make them easily accessible as services to the user. This goal can now be easily accomplished if the systems are web-enabled with well-defined web services interfaces allowing users to request and access the services through an internet portal. This general services deployment strategy will be well supported and made possible through the creation of Identity Management Services as defined in Plan Action #8.

The IT literature is now saturated with papers reviewing the advantages of service-oriented approaches to architecture, interface development, operations, and service quality assessment, improvement and investment. The IT Roadmap [www.vpit.ualberta.ca/planning/roadmap/pdf/roadmap_v3.2.pdf] discusses a process to undertake service alignment involving service mapping, service chain analysis and service area grouping. The feedback received on service alignment to date has been extensive. The strong message is that central support groups such as AICT and AIS must clearly define:

i) what services will be supported centrally and with what service level commitments,

ii) what services will be shared with the faculties or other units and how will these services be jointly managed and at what cost, and

iii) what services will not be supported centrally so that other units will know that they need to develop supports for or acquire these special services.

The execution of this process will follow existing standards and best practices as defined in ITIL ([Information Technology Infrastructure Library -- www.itil-itsm-world.com]), and will provide significant overall improvement in the effective and efficient deployment of our IT services. It potentially will have the largest impact of any of the plan actions in this report.
Plan Action #28: A process of service alignment and management must be undertaken beginning with the creation of a services alignment scorecard. As service alignment is achieved and management is undertaken, the scorecard should be updated on an annual basis and provided as a part of the IT Strategy 20xx document.

A final important recommendation related to service delivery addresses the need to plan for extended hours of operation of IT services. Over the last five years the University has moved from an institution that primarily operated from 8:00AM to 4:30PM. From the perspective of IT services and support this is really no longer true, but the change has not been properly identified and planned. This leads to the following important plan action.

Plan Action #29: It is recommended that a report be prepared through the Vice-Provost (IT) Office that documents the nature of and pressure related to extending key IT services and support outside the regular operation period of 8:00 to 4:30PM. Based on this report, additional service needs will be defined and associated budget to support these needs will be identified.

4.12 Service Support for the Faculties

Faculties and departments depend on the availability of a number of IT systems and services provided by the AICT and AIS in many areas. In those instances where services are cost recovery, proposed changes to their cost schedules should be justified and advertised well in advance of the change.

Plan Action #30: The issue of establishing and changing service charges should be examined. Initial feedback is that charge rates for certain information technology services should be established on an annual basis and notice of change in rates for the coming year should be made with appropriate justification well in advance of the beginning of the next fiscal year.

5 PLANNING AND SERVICES ALIGNMENT AND PLAN ACTION SCORECARD

Table 1 summarizes the alignment of the thirty Plan Actions with the four components of Dare to Deliver and four major IT service areas. It is not too surprising that there is significant alignment of the plan actions with the fourth component of Dare to Deliver, Building a Transformative Organization. IT has and will continue to be a catalyst to transformation in the foreseeable future. With respect to plan action alignment to service areas, all areas have very good alignment. Teaching and Learning and Access and Communication Services having the greatest alignment; this is perhaps not too surprising considering the strong emphasis on an improved learning environment in the Academic Plan. Even for the two areas of the Academic Plan with least alignment, Incubating Scholarship and Connecting with Communities Near and Far, there are excellent possibilities of deploying IT in support of initiatives in these areas. Overall, this alignment analysis confirms a case in support of future investment in IT, but this
investment needs to be well planned and in support of carefully deployed, reliable and sustainable services and infrastructure.

It is critical to the success of this plan that it be tracked with a scorecard that annually reviews progress over the life of the plan (2007-2010). Appendix A provides an initial summary scorecard that can be adopted as a starting point. For each plan action, the responsible units, an expected date of completion, and key performance measure(s) are included.

CONCLUSION

This plan has purposely tried to downplay the discussion of technology and focus on its effects, real or anticipated, on our processes and people over the next four years. This is the clear message received from the feedback we received at the very beginning of this exercise, when we developed the IT Planning Roadmap. Nevertheless, important decisions will need to be made on what technologies we will need to invest in and what levels of service we need to provide in order to receive real value from our information systems. This plan is our framework for identifying the key value opportunities over the next four years. The exact investments we make will be determined by the University’s priorities as defined in Dare to Discover and Dare to Deliver and the need to deliver on important services with adequate people support and infrastructure renewal. Annual Strategy 20xx documents will outline the priorities, the budget and the time to complete the plan actions of the IT Plan together with new plan actions that emerge over the next four years.

The rapid change of information technology tells us that there will undoubtedly be new plan actions forthcoming. Already we see forces at work that are shaping new technology developments. The following are examples of “seven wonders of the future digital world.”

1. **Increased Energy Costs**: Within the next year or two the cost to purchase a computer will be less than the energy costs to run that computer through its lifetime of four to five years. The biggest future limitation to information technology will be energy availability.

2. **Security and Privacy**: Ushered in by events such as 9-11, the need for enhanced security and protection of privacy will result in increased emphasis on multifactor identification (e.g., login-password and retina scan), encrypted information during transmission and storage, and the storage of most information behind firewalls and in physically secured place. Yet, at the same time there is a growing movement in academia to make information more open and freely available.

3. **Mobile Learning**: The rapid increase in availability of portable devices like cell phones and pda’s and the movement towards standard communication protocols for these devices will usher in an age of “just-in-time,” mobile learning the likes of which we can barely imagine today.

4. **Edutainment**: The use of computing to both educate and entertain through exploratory virtual reality environments such as Second Life (www.secondlife.com) - “Your
World. Your Imagination.”) will blur the lines of formal education and acquired education on the internet.

5. My Life and the Need to Connect: The need to stay connected and share life experiences using video and photo images will generate an astronomical appetite for digital storage and back-up. What will be the effect on universities of this growing social phenomenon as expressed in things like Facebook (www.facebook.com - “a social utility that connects you with the people around you”), U-Tube (www.youtube.com - “broadcast yourself”) and MySpace (www.myspace.com - “a place for friends”).

6. Personal Healthcare: With the increasing availability of patient records, feed in part by high-speed, secure and mobile monitoring devices, it will be possible for patients connected with integrated health teams (doctors, nurses, nutritionists, rehab therapists, and pharmacists) to proactively plan for and achieve a healthier lifestyle.

7. The Power of Search: “The World Digital Library (www.worlddigitallibrary.org) will make available on the Internet, free of charge and in multilingual format, significant primary materials from cultures around the world, including manuscripts, maps, rare books, musical scores, recordings, films, prints, photographs, architectural drawings, and other significant cultural materials. The objectives of the World Digital Library are to promote international and inter-cultural understanding and awareness, provide resources to educators, expand non-English and non-Western content on the Internet, and to contribute to scholarly research”. This is possible because organizations like Google (who is supporting the project) have created powerful search capabilities that bring information instantly to our desktops. How will this change our Libraries of today?

All of these changes cannot help but cause us to ponder the future of University and how it will adapt. In a session at Educause 2006 (www.educause.edu/e06), the comment was made “There is a freight train coming down the track and it is not clear that my university … or any of our universities are prepared for it. We sit squarely on the tracks and I’m not sure how we can get off.” A goal of this plan is to help us to find a way off, get to the nearest interchange and climb aboard.
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**Table 1 – Plan Action vs Academic Plan and Service Area Alignment**
Appendix A: Plan Action Scorecard

**Plan Action #1:** Additional IT resources for both central services and faculty-based support are needed to fulfill the commitment to Discovery Learning defined in the Academic Plan. The nature and extent of these resources will be framed by the Teaching-Learning Initiative and determined over time through consultation with the TLAT Council and TELSAC (Technology Enhanced Learning Spaces Advisory Committee).

**Responsible Units:** VPIT, TLAT Council, TELSAC

**Estimated Time To Complete:** Ongoing, reviewed on an annual basis

**Measurement(s) of Success:** Students and faculty will complete a survey on a regular (perhaps annual) basis providing feedback on the quality of their learning environment. The results of this survey will be reviewed by both TLAT Council and TELSAC (Technology Enhanced Learning Spaces Advisory Committee).

**Plan Action #2:** The University, working in collaboration with the other key Alberta stakeholders, will take the lead in the creation of sustainable and enhanced cyberinfrastructure through the formation of ACI (Alberta Cyberinfrastructure for Innovation).

**Responsible Units:** VPIT, Vice-President Research, Provost, AICT

**Estimated Time To Complete:** ACI created by July 2007. Funding to support ACI for its first five years is now being sought.

**Measurement(s) of Success:** ACI users will complete a survey on a regular basis providing feedback on the quality of service provided by ACI. This survey will assist in determining the relative success of ACI and how its services should evolve and improve. An external team will review ACI in the fourth year of its operation.

**Plan Action #3:** The University will create a plan for the development of Alberta U Communication Portals, a series of rooms and other spaces that will be developed to promote the use of videoconferencing and other communications technologies to support the University’s plan of connecting with communities both near and far.

**Responsible Units:** VPIT, Provost Office, Alberta International, AICT, TELSAC

**Estimated Time To Complete:** Plan should be developed over the next year and implemented over the following three years.

**Measurement(s) of Success:** Videoconferencing services will be included as part of the learning environment quality survey described in Plan Action #1 and reviewed by TLAT Council and TELSAC, a subcommittee of the Faculty-Based ICT Committee.

**Plan Action #4:** The University will establish an initiative to investigate on an ongoing basis and, as appropriate, invest in and promote social networking software that recognizes modern communication styles preferred by students and supports the University’s plan for connecting with communities both near and far.
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Responsible Units: VPIT, AICT, Faculty-Based IT Committee, TLAT Council, Web Refresh Project Steering Committee

Estimated Time To Complete: Ongoing activity to be reviewed by Faculty-Based ICT Committee. As appropriate, input will be sought from other committees such as TLAT Council and the Web Refresh Project Steering Committee. A key component of this plan action is support for mobile learning including the completion of a campus wireless network.

Measurement(s) of Success: Social software needs assessment will be included as part of the learning environment quality survey described in Plan Action #1 and reviewed by the Faculty-Based ICT Committee.

Plan Action #5: Planning for IT infrastructure in support of new or significantly enhanced space should incorporate the following improved practices:

a) Planning for IT should be formally incorporated as a step in space plan development and Capital Planning.
b) The initial costs for new or renovated space should identify the costs of IT at the time the building project is approved.
c) In developing any new or renovated space, space requirements for housing file or compute servers should be met, whenever possible, from existing common server room or computing centre spaces. Only under exceptional circumstances should one-off server room space be developed.

Responsible Units: Vice-President(Facilities and Operation), VPIT, AICT, Provost Office

Estimated Time To Complete: Discussions should take place immediately with the goal of updating space planning procedures over the next year.

Measurement(s) of Success: New space planning procedures take affect on all new or renovated space projects.

Plan Action #6: A new web presence will be developed for the University to assist in promoting more effective and consistent communication of the University’s initiatives and decisions. All major University units will be strongly encouraged to adopt the common format of the web presence that will be created.

Responsible Units: Vice-President(External), VPIT, AICT, Web Refresh Project Steering Committee

Estimated Time To Complete: Initial version of our new web presence is planned for September 2007. Improvement to the University’s web presence is expected to be continuous thereafter.

Measurement(s) of Success: Initial measure of success will be meeting target of new web presence by September 2007. Continuous improvement will be established based on established service level commitments and regular quality surveys by our user community.
Plan Action #7: An integrated electronic document management strategy and associated service will be developed for the University to aid in more reliable, accessible and maintainable information dissemination across the University.

Responsible Units: VPIT, all campus units (several units are represented on the Electronic Document Management Working Group – EDMWG).  
Estimated Time To Complete: Initial version of a strategy document will be developed by the EDMWG June 2007. An implementation plan will be developed in the fall of 2007 and needed funding to implement the first phase of the plan will be requested as part of the 2008-09 budget.  
Measurement(s) of Success: Initial measure of success will be meeting the targets for the strategy, implementation plan and budget request. Long-term success will be measured through the development of service level commitments and an annual service quality survey.

Plan Action #8: The University will develop a new Identity Management Service (IMS) that provides a mature authentication and authorization scheme to enable the enforcement of access rights to digital resources and information services for a wide variety of staff and student roles.

Responsible Units: VPIT, AICT, AIS, Learning Services. Cooperation is needed with many other university units and coordination is needed with the Web Refresh Project.  
Estimated Time To Complete: Initial version of an Identity Management Service will be developed by September 2007. This will also include an initial student portal. A fully functional IMS, supporting single-sign-on, secure authentication and authorization is estimated to take between 18 months to two years to complete.  
Measurement(s) of Success: Initial measure of success will be completing a first prototype by September 2007. Improvements thereafter will be obtained through monitoring the IMS project by the project oversight committee, defining and achieving service level commitments, and conducting an annual service quality survey of the users.

Plan Action #9: The University needs to develop clear privacy and security policies related to the management of and access to University information of a personal nature on computers managed by other parties.

Responsible Units: VPIT, FOIPP Office, OISS (Office of Information Systems Security)  
Estimated Time To Complete: Completion of a revised set of policies and procedures for computer access and use and personal information disclosure is expected over the next 18 months.  
Measurement(s) of Success: This plan action will be considered complete when all policies and procedures related to information security and privacy have been revised and approved in proper UAPPOL format.

Plan Action #10: Working together with Capital Health and other healthcare authorities in the province, the University must support agreed upon network access protocols that
will allow University healthcare students and staff to transparently and simultaneously work in a highly secure hospital environment and a more open University environment in which they undertake their teaching and research activities.

**Responsible Units:** Health Sciences Faculties, VPIT, OISS (Office of Information Systems Security). Capital Health Authority is an essential partner.

**Estimated Time To Complete:** Completion within the next year is critical in achieving the goal of an integrated desktop for health science faculty, staff and students.

**Measurement(s) of Success:** This plan action will be considered complete when ORA (Organizational Readiness Assessment) is met.

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**Plan Action #11:** To aid in decision making related to the level of funding to support the planned increase of new professors with appropriate support, the Office of the Vice-Provost (IT) will develop by September 2007 a financial model to determine the total cost of IT infrastructure and support for the University. The financial model should be revisited on an annual basis through the duration of the academic plan (i.e., until 2010).

**Responsible Units:** VPIT, Provost Office

**Estimated Time To Complete:** Eight months

**Measurement(s) of Success:** Completed and approved financial model.

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**Plan Action #12:** Beginning this year 2007, AIS (Administrative Information Systems) should undertake an annual review of the product strategy for the Oracle-PeopleSoft ERP to determine when and if it is feasible to move to the proposed Fusion platform. If appropriate, tracking of alternative platforms, such as new open source ERP platforms should also be undertaken.

**Responsible Units:** AIS and VPIT in conjunction with AISSC and AISSC Executive Committees

**Estimated Time To Complete:** Initial review will take approximately two months to complete. Annual update will take one month to complete. AISSC and AISSC Exec should review annual report in September each year.

**Measurement(s) of Success:** Reviews will be important input leading up to 2010 when the University’s current production and new development vendor contracts expire. It is expected that the decision when and if to move to the Fusion platform must be made at that time.

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**Plan Action #13:** The introduction of smart forms will affect quite dramatically how we carry out business transactions in the University. The overall effect will undoubtedly be positive, but the impact of this change must be properly managed. It is recommended that AIS plan for ways to address change management resulting from the deployment of new administrative information systems and that the need for a change management officer position be assessed and, if required, funding for such a position be requested in future budgets. The University must seek to address the challenges of change management.
more broadly. A cooperative strategy involving AIS but lead by Human Resources should be initiated.

Responsible Units: Vice-President (Finance and Administration), VPIT, AIS, Human Resources. Consultation with AISSC and AISSC Exec Committees is needed.
Estimated Time To Complete: Completion within the next six months, in time for 2008-09 budget submission.
Measurement(s) of Success: Completion of a smart forms, change management impact report and, as necessary, the development of a budget request for the 2008-09 budget.

Plan Action #14: The University must plan to invest in data warehousing capabilities that are compatible with our existing ERP system ideally over the next two to three years. A full data warehousing capability will require significant long-term investment.

Responsible Units: Vice-President (Finance and Administration), VPIT, AIS, Resource Planning, Strategic Analysis. Consultation with AISSC and AISSC Exec Committees is needed.
Estimated Time To Complete: Completion of a plan within the next six months, in time for a possible 2008-09 budget submission. Note that a data warehousing capability will take significant investment that cannot be handled within the current new application development budget. It will also take some time (two to three years) to implement the system and develop a mature environment to support data warehousing.
Measurement(s) of Success: Completion and strategic use of a flexible reporting environment supported by data warehousing capabilities that integrate data across our administrative applications.

Plan Action #15: In addition to finding funds to add more functionality in support of our core ERP information services, additional funding will be required to build special interfaces to provide connectedness to new and enhanced auxiliary service systems. Estimates of the costs of building and maintaining these interfaces should be determined and included in the total project costs at the time the new or enhanced auxiliary service is planned.

Responsible Units: Vice-President (Finance and Administration), VPIT, AIS. Consultation with AISSC and AISSC Exec Committees is needed.
Estimated Time To Complete: A policy and associated procedures should be defined in the four months, in time to apply to projects proposed in 2008-09 budget submission and thereafter. Funding would be on a shared basis: 50% from auxiliary service system budget and 50% from AIS.
Measurement(s) of Success: Completion and implementation of the new policy and associated procedures.

Plan Action #16: The following activities will be pursued to address outstanding shortcomings in IT Disaster Recovery:
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a) AICT will revise its Disaster Recovery Plan and submit this plan for review and implementation starting in 2007.

b) The business case for a regional disaster recovery centre should be completed and submitted to the University for review and approval to proceed with planning. Planning would be completed on a regional basis and, if consensus on a regional disaster recovery centre development can be reached, the associated plan would be submitted to the government for possible funding.

c) In order to mitigate the risk of a two to three month business failure, the University, working in coordination with our managed services vendor IBM Global Services, will define and deploy a disaster recovery strategy for our administrative information systems in the planning period.

Responsible Units: VPIT, AIS, AICT, EPC. Consultation with the IT Committee, Faculty-Based ICT Committee, AISSC Exec Committees and various other committees is needed.

Estimated Time To Complete: This plan action is already well under way. Item a) will be completed within the month, item b) within the next six to eight months and item c) needs further review taking into account our costs, out upgrade schedule and when our current outsourcing contract ends. The implementation of the plan could take three to four years to complete.

Measurement(s) of Success: Completion and implementation of a disaster recovery plan.

Plan Action #17: A coordinated review of business continuity issues that can arise as a result of a major outage or disaster should be undertaken by the Leader, Emergency Preparedness and Business Continuity and the Vice-Provost (IT) office in the near future. The goal of the review is to have an emergency preparedness and business continuity plan for AICT that is a component of the University’s overall Integrated Emergency Management Program.

Responsible Units: Vice-President (Finance and Administration), Business Continuity coordinator, VPIT, AIS, AICT.

Estimated Time To Complete: Completion within the next two years.

Measurement(s) of Success: Completed when a discovery recovery plan for campus information systems is completed and integrated as part of the University’s Business Continuity Plan.

Plan Action #18: UTS and the AICT E-Learning Group, working in cooperation with the TLAT Council, should assess and report on the nature and type of institutional orientation, support and training needed by faculty to be properly prepared to undertake Discovery Learning initiatives involving the use of learning technologies.

Responsible Units: UTS, AICT E-Learning, VPIT, Provost Office in consultation with TLAT Council and FB ICT Committee.

Estimated Time To Complete: Review and report to be prepared within the next year.
Measurement(s) of Success: Initial success will be the identification of support and training strategies. Long-term success measures must be identified as part of the implementation of these strategies.

**Plan Action #19:** A study coordinated by the Human Resources Office, should undertake an assessment of training and support needs for support staff in the area of IT skill development. The study should focus on availability of training space, type of training required (e.g., face-to-face, hands-on, online) and recommendations to meet the identified needs.

**Responsible Units:** HR, VPIT, AIS, AICT, VP(F&A), Provost Office

**Estimated Time To Complete:** Study should be carried out over the next 18 months.

**Measurement(s) of Success:** Completion of study and implementation of the recommendations.

**Plan Action #20:** Each Faculty is strongly encouraged to ensure that students are capable of successful participation as active learners and that they have essential information literacy skills. Related educational programs and resources will incorporate active learning strategies. A University-level working group will be established to explore ways of providing core introductory instruction or resources on active learning and information literacy that would serve as a foundation for Faculty programs.

**Responsible Units:** Faculties, Provost Office, VPIT. Consultation with TLAT Council and ASC is needed.

**Estimated Time To Complete:** Sixteen months for working group to complete exploration and make recommendations.

**Measurement(s) of Success:** Completion of working group report and implementation of findings.

**Plan Action #21:** The Vice-Provost (IT) Office working in collaboration with AICT will develop a sustainability model that will support software license renewal and the planned replacement and upgrade of essential academic computing equipment on a 3 to 4 year cycle. Additional funding, based on proper justification, must also be found for innovations in support of new models of interactive learning and discovery that are emerging.

**Responsible Units:** AICT, VPIT, Provost Office. Consultation FB ICT Committee.

**Estimated Time To Complete:** Completed in next six months in time for submission to the 2008-09 budget process.

**Measurement(s) of Success:** Completion and approval of the model.

**Plan Action #22:** A process for the development of an annual strategic planning document will be created by the Vice-Provost (IT) Office and approved by the Provost and Vice-President (Finance and Administration) within six months of the approval of the IT Plan.
Responsible Units: VPIT, Provost Office, VP(F&O). Consultation IT Committee.
Estimated Time To Complete: Completed in six months after the approval of the IT Plan.
Measurement(s) of Success: Completion and approval of the process.

Plan Action #23: The TLAT Council should review the integrated distributed model for services and support as developed in the CLE Subcommittee Report on Teaching, Learning and Technology Innovation and Leadership (May 2006). It should determine where overlaps and gaps exist in how we currently operate when compared to the model definition and make recommendations related to the operation of this model.

Responsible Units: TLAT Council, VPIT, Provost Office. Consultation FB ICT Committee.
Estimated Time To Complete: Completed in a year.
Measurement(s) of Success: Completion of review and approval of the model.

Plan Action #24: Because of the growing importance of IT in teaching and research, each Faculty is strongly encouraged to form an IT Planning Committee or Teaching, Learning and Technology Planning Committee that provides a forum for identifying the Faculty’s IT needs in general or the Faculty’s IT needs in support of teaching and learning.

Responsible Units: Faculties. Consultation VP(IT).
Estimated Time To Complete: Review this recommendation with each Faculty over the next two years.
Measurement(s) of Success: Completion of review and action taken by each Faculty that is appropriate to their circumstances.

Plan Action #25: A cyberinfrastructure subcommittee of the Faculty-based ICT Committee should be established to provide input on the availability and quality of service provided by ACI (Alberta Cyberinfrastructure for Innovation - see Plan Action #2) when it is created.

Responsible Units: FB ICT Committee, AICT, VP(IT), VP(Research). Consultation with ACI and URPC (University Research Policy Committee) is needed.
Estimated Time To Complete: Review this recommendation within a year with the FB ICT Committee and URPC. Strike this subcommittee if this action is deemed appropriate.
Measurement(s) of Success: Completion of review and action taken by FB ICT Committee.

Plan Action #26: The TLAT Council should undertake a review of the E-Learning Plan 2005 to assess progress on its recommendations and refresh the plan.

Responsible Units: TLAT Council, VP(IT). Consultation with UTS, AICT and FB ICT Committee is needed.
Estimated Time To Complete: Review should be undertaken over eight months.
Measurement(s) of Success: Completion of review and actions taken on issues arising form the review.

Plan Action #27: The University will undertake a review of our campus-wide Learning Management System by the fall of 2008. The review should take into account a wide variety of factors; however, three important factors include the requirement to support our existing investment in course materials; the need to support Discovery Learning as defined in the Academic Plan; and the desire for a common knowledge management capability that supports both teaching and research and the integration of these activities.

Responsible Units: AICT, UTS, VP(IT), Provost Office. Coordinated with FB ICT Committee, TLAT Council. Consultation with CLE
Estimated Time To Complete: Six months
Measurement(s) of Success: Completion of review along with implementation of recommended actions.

Plan Action #28: A process of service alignment and management must be undertaken beginning with the creation of a services alignment scorecard. As service alignment is achieved and management is undertaken, the scorecard should be updated on an annual basis and provided as a part of the IT Strategy 20xx document.

Responsible Units: AICT, AIS, VP(IT), Provost Office, VP(F&A). Coordinated with ITC, FB ICT Committee, AISSC, TLAT Council. Consultation with many University departments and units and several other committees.
Estimated Time To Complete: Twelve months for initial review. Must then be reviewed on an ongoing basis.
Measurement(s) of Success: Completion and review of score card along with a set of recommended actions to achieve alignment.

Plan Action #29: Recommend that a report be prepared through the Vice-Provost (IT) Office that documents the nature of and pressure related to extending key IT services and support outside the regular operation period of 8:00 to 4:30PM. Based on this report, additional service needs will be defined and associated budget to support these needs will be identified.

Responsible Units: AICT, AIS, VP(IT), Provost Office, VP(F&A). Coordinated with ITC, FB ICT Committee, AISSC, TLAT Council.
Estimated Time To Complete: Twelve months
Measurement(s) of Success: Completion of review along with implementation of recommended actions.

Plan Action #30: The issue of establishing and changing service charges should be examined. Initial feedback is that charge rates for certain information technology
services should be established on an annual basis and notice of change in rates for the coming year should be made with appropriate justification well in advance of the beginning of the next fiscal year.

Responsible Units: AICT, AIS, VP(IT). Coordinated with ITC, FB ICT Committee, AISSC.
Estimated Time To Complete: Six months
Measurement(s) of Success: Completion of review along with implementation of recommended actions.

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