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# Information and Communications Technology Plan

For the 2008-2012 Planning Cycle

October 2007

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## Part One

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*Celebrating 50 Years of  
Computing at the U of S:  
1957-2007*

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# 1. Executive Summary

*“Organizations that use technology to update not only their systems, but also their cultures, stand the best chance of achieving their goals. Therein lies one of the major values of technology”.*<sup>1</sup>

Broadly speaking, Information and Communications Technology (ICT) refers to the hardware, software and networking infrastructure we use to manage, process and transmit information and information-related services. Because information in its various forms is so integral to the mission of higher education, ICT has become tightly woven into the fabric of the contemporary university—significantly impacting the way we teach and the way we learn, the way we do our research, the way we support our business processes and the way we interact with both those whom we serve and those with whom we work. The quality of our ICT environment affects our reputation, our ability to meet international standards in what we do, and our ability to compete for the best faculty, staff and students. Indeed, investing in ICT is critical if the University is to attain the strategic goals articulated by the President in *Renewing the Dream*.

Responsibility for ICT leadership rests in the Office of the Associate Vice President (Information and Communications Technology). This responsibility is exercised through collaborative planning with academic and administrative units to ensure that local needs are addressed within an institution-wide context, and through executive authority for the Information Technology Services Division (ITS)—the unit that provides centralized ICT services to support teaching, learning, research and administration. Many other units, both academic and administrative, have active ICT groups as well, with responsibility for development and support of initiatives that address the special needs and agendas of their own unit. Institutional planning for ICT must balance these local interests with the (sometimes competing) interests of the entire campus, something that’s possible only with widespread consultation and engaged participation in both planning and execution. The purpose of this document is to provide a consolidated University vision for ICT for the next planning cycle.

It’s a constant challenge to keep up with the ever-increasing demand from our students, our faculty, our staff and the public for more and better technology. A number of factors contribute to this growing demand, including

- the changing service expectations of both our internal community (our faculty, staff and students) and our external customers (the general public),
- the changing composition of our faculty and student populations, and
- new capabilities afforded by technology advances.

These demands are for new operational paradigms, with an increasing focus on distributed web-based self-service, and for new services to support our growing dependence on technology to do our jobs.

Financial challenges are part of everyone’s reality, but ICT presents intense financial challenges since technology is expensive and the demand for it appears to grow at an unbounded rate. At the same time, these are investments that the University must make to remain competitive. To

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<sup>1</sup> John Southard, “What Technology Can Do If We Let It”, *CAUSE/EFFECT*, Summer 1990.

address this dilemma we must do several things. We must ensure that our priorities are well understood, that our plans are sound, and that we are spending what we do in the most effective way. We must be ever watchful for opportunities to consolidate, to leverage, and to generate savings, but we must not be afraid to invest where investment is needed.

As we stated in the 2004 plan, to be effective or meaningful, ICT planning (both short-term and long-term) must be done in a context of stable and predictable funding. Our historic reliance on *ad hoc* and unpredictable sources of funds for equipment acquisition, for operations, for renewal, and for staff is not sustainable. We can cite successful initiatives (such as the campus computer network, the classroom renovation project and student computing) where stable and predictable funding has been critical to that success, and we can also cite many examples where problems have been created by opportunistic or reactive approaches (such as in our fragmented approach to supporting the desktop computing needs of our faculty). Although we may achieve “random acts of success” through opportunistic approaches, we can’t expect to make sustained progress until we break out of this pattern.

The substantial investments we have made in new technologies in recent years have presented both opportunity and incentive to change the way we do some things. But our investments in initiatives such as a new student information system or a campus-wide portal will not return their full benefit unless individual units (and individual users) are prepared to contribute to coordinated planning and participate in collective decision-making, and then align their processes and practices to the norms thus established.

As it did in 2004 our plan presents many exciting opportunities for ICT initiatives to improve what we do and how we do it. But no single unit can set the University’s technology direction—collaborations and partnerships will continue to be vitally important. Coordinated planning is necessary to balance unit-specific and institution-wide needs in order to set priorities appropriately. Although ICT is “everybody’s business” strong central leadership will bring this distributed activity together and ensure that the full business of the University of Saskatchewan is appropriately nourished by information and communications technology. We look forward to working with each and every unit to integrate ICT into their plans and to using these plans to achieve our shared goals.

## 2. Introduction

*“Information Technology in the context of a value discussion cannot be limited to hardware and software. Rather the term must encompass the efforts and expenditures made to adapt organizations, processes, and people to take advantage of technology. More often, it is in the marriage of people, process, and technology where value is either created or destroyed.”<sup>2</sup>*

The University of Saskatchewan acquired its first computer in the fall of 1957, a Royal McBee LGP-30. This single computer was deemed sufficient to meet the computing needs of not only our entire campus, but the Saskatchewan Research Council and the NRC Prairie Laboratory as well. We’ve come a very long way in just fifty years. Today there are more than 10,000 computers on campus and everyone is a user.

It’s an accepted fact that Information and Communications Technology (ICT) is critical to success in the contemporary university. As our Foundational Document<sup>3</sup> makes clear ICT has transformed the way we do our work and where we do it—from teaching and learning, to conducting our research, to communicating with colleagues here and afar. It’s affected how we deliver services to “customers” that span every sector of our community and how we support and manage our business processes. Meeting ever-increasing demands is a constant challenge and how we respond is a vital factor in our ability to remain competitive as a preferred place to work or study.

But our responsibilities as ICT professionals extend far beyond the technology. As Dr. Menard Gertler put it in his 2006 Convocation address, “technology that doesn’t help people has no value.” Our jobs are about providing vision and leadership to the campus and bringing value through the services we deliver with the technology.

The past five years were a period of intensive ICT development at the U of S, with significant accomplishments: new technology was put in place to enhance the computing environment for our students and a new approach to planning, provision and management of student computing was introduced; we developed our first campus-wide portal, PAWS, and it has been immensely successful; we completed a full-scale upgrade of our campus computer network (some 10,000 connections), assisted by \$12 million in external funding; and we implemented two new “enterprise” systems, SiRIUS and UniFi, to transform a comprehensive array of student- and finance-related processes from registration to fee payment to exam schedules to grades. We also addressed the governance and policy framework, introducing three new institutional policies (for e-mail, data use and network security) and updated our longstanding computer use policy to reflect contemporary technologies, norms and expectations. More extensive comment on activity

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<sup>2</sup> Phil Goldstein, Richard N. Katz and Mark Olson, “Understanding the Value of IT”, *EDUCAUSE Quarterly*, No. 3, 2003.

<sup>3</sup> *Advantage U of S: Foundational Document for Information and Communications Technology at the University of Saskatchewan*, June 2003

over the last planning cycle, both initiatives that have progressed well and initiatives where less progress has been made, is provided in Section 3.

In preparing for the next planning cycle we set out seven broad priorities to guide our planning. These follow from lessons we learned over the previous planning cycle and provide the framework for the initiatives presented for the next. The priorities we have defined for the next planning cycle are:

1. Consolidate and integrate
2. Increase support to users
3. Address information needs
4. Manage risks
5. Clarify ICT governance
6. Ensure stable and predictable funding for ICT initiatives
7. Innovate and lead

### **Consolidate and Integrate**

With the extensive development work of the past five years behind us, and informed by lessons learned as we did that work, we now need to devote more of our collective attention to the consolidation and integration of our services, focusing on increased interoperability and increased standardization in both our systems and our data. The functionality we need requires that our various systems work together seamlessly, and our reporting requirements will not be served by “siloeed” approaches to our data. We have some successes on which we can build (identity management, PAWS, wireless and e-payments are good examples) but we need to do more than we are.

### **Increase Support to Users**

In our collective enthusiasm for new technology we must not lose sight of the people (the students, instructors, researchers and staff) whom the technology serves. As we bring in ever more technology to support instruction in both the physical and electronic environments, as we become increasingly reliant on technology to do research in the full range of disciplines and as we introduce new technology-assisted business processes we must ensure that users in both administrative units and colleges get the help they need to enable them to reap the full benefit of the technology we have provided.

It is no secret that some of our user community has found the rapid pace of change over the past five years to be somewhat bewildering. To address the danger of a “digital divide” we need to devote more attention to training and end-user support to ensure that everyone benefits fully from the investments we have made and the great work that has been done.

### **Focus on Information**

Information is one of a university’s most valuable assets and a critical requirement for a high performance culture. The effective use of information, both strategically and operationally, is vital to the future success of the University and can be a competitive differentiator.

Over the past decade, significant investments have been made in new systems and new processes for capturing and storing institutional *data*, including About-US (for HR-related data), SiRIUS (for student-related data) and UniFi (for financial data). We do a great job with our data, ensuring its accuracy and protecting it from harm or misuse, but obtaining the *information* needed to support some critical business requirements has occasionally proven to be difficult. We have some tools in place to obtain operational reports from our new systems, but applying context to the available data to create meaningful and useful information has been challenging. Inadequate processes, unclear roles, inconsistent definitions, and stand-alone architectures all contribute to this difficulty.

Without reliable and timely information, the University's ability to make well-informed decisions or report to external agencies and stakeholders is compromised. We need a strategy to address our data/information management vision, goals, priorities, design principles, and operating policies in support of our strategic directions and overall business goals in a holistic way. Work is underway that will culminate in recommendations in the areas of people, processes, organizational responsibilities and technology.

### **Manage Risks**

ICT is characterized by extremes: exceptional opportunities to improve processes, but also very large investments and potentially crippling risks. We need to ensure, of course, that we invest our ICT dollars wisely so that we deliver value in the choices we make, and we need to ensure that our risks are understood and properly mitigated. We must protect our systems, our users and our data from those that would do harm accidentally or intentionally, and we need to ensure that we have plans in place so that we can carry on with our business in the event that some crucial technology on which it depends should suddenly become unavailable. Planning is underway in the areas of network and system security, user awareness training, business continuity planning and disaster recovery.

### **Clarify ICT Governance**

Because ICT has become so vital to our enterprise, its governance must be accorded high institutional priority. Since ICT issues cut across every sector of the campus, there must be institution-wide oversight, coordination and facilitation so that organizational boundaries do not impede progress. Major strategic investments such as the development of a new student information system or a campus-wide portal must be discussed widely since the impact is broad. Decisions to go forward are *business* decisions that impact everyone, so they must not be made solely by those responsible for deploying the technology or those who will be its primary users. An appropriate governance structure ensures that we develop our plans and set our priorities collectively, that our actions are consistent with our values, strategies and objectives, and that our investments return the value we expect. Planning of ICT initiatives needs to be driven by business needs and strategic directions, not solely by the cost or by the capabilities of the technology.

Governance is about who makes what decisions, who advises those who make those decisions, and how and where that advice is provided. It's about roles, responsibilities and authority. Leaders need to lead and stakeholders need the opportunity to contribute meaningfully to decision-making at a point appropriate to their institutional roles.

As was noted in the 2004 plan our *federated* approach to ICT governance seeks to balance two opposing models. Centralization brings the advantages of scale economies, enterprise-level planning and institution-wide control of standards (best practices), but a highly centralized approach can be perceived as unresponsive to individual unit needs. Decentralization offers local control of priorities and expenditures and the ability to respond nimbly to opportunities but can create costly redundancies, fragmented competencies, and uneven or inconsistent service delivery. A true University-wide ICT strategy would be difficult to achieve in a fully decentralized model, where the focus on individual needs can be at the expense of institutional needs. With a federated model, we can both accommodate the autonomous nature of individual units and achieve the scale economies of the centralized model. Strong and effective central leadership, with significant local input and respect for boundaries, is a hallmark of a successful federated model.

Our community has embraced a federated approach to ICT in its practices and in its structures, but we must continue to sharpen our understanding of responsibility and authority. We have worked hard over the past five years to develop a governance model that preserves the institutional values we hold to be important, provides opportunities for stakeholders to be meaningfully engaged in the planning and development of initiatives, provides for both technical and non-technical input (since both are critical to success), and ensures that those developing and supporting our technology are fully accountable to the community that technology serves. This ensures that our ICT initiatives are developed in accordance with our collective sense of institutional priorities and institutional values.

### **Ensure Stable and Predictable Funding for ICT Initiatives**

Bob Rae speaks of the “tyranny of situational funding,” a problem that has frustrated ICT planning on this campus and limited its execution for decades. This was noted in several external reviews through the early 1990s and the University’s response was to create a new fund, the System Development Fund with an annual allocation of \$1 million, to provide the means to respond to new ICT demands on an ongoing basis. Not only has that fund failed to keep pace with either demand or inflation in the intervening decade, much of it has been permanently redirected. With insufficient and unpredictable funding we become too reliant on staff with only term appointments, we cut corners to save money (for which we inevitably pay later) and we focus too heavily on projects for which someone is willing to pay rather than strategic priorities.

Technology is expensive. Rather than reacting to requests for funding on a project-by-project basis, though, we should decide what we are prepared to spend on ICT and then provide ongoing funds so that those that are responsible can do the work they have been hired to do. Institutional priorities should drive decisions, not just the ability to secure funding.

### **Innovate and Lead**

Despite the relentless pressure of day-to-day responsibilities it is vitally important that we make time available for ICT staff to monitor new developments, assess their possible application on our campus and, where and when it makes sense, advocate for their introduction. The campus community must and does look to us for leadership, and it expects the advice we provide to be informed by solid research. This is vital to effective technology stewardship.

### **3. Situation Assessment: 2004-2007**

There were a number of significant accomplishments during the last planning cycle. Here is a summary of a few of the highlights with comments on their connection to the themes of the second planning cycle. A more comprehensive report on the progress on the various projects that were proposed in the last plan and outcomes that were achieved follows in the next section.

Our development of the student computing environment is a continuing priority and a critical element in Theme A (enhancing the student experience). Among the many highlights in this area were continued development of PAWS and associated services, expansion of wireless services, installation of network connections in the residences (Resnet) and our ongoing experimentation with new e-learning technology (webstreaming lectures, podcasting, clickers, etc.). The response from students continues to be extremely positive. For the fourth year in a row we received A grades from our students in the annual Globe and Mail survey of student satisfaction. The quality of their technology environment is extremely important to the current generation of technology-savvy students (often dubbed “the net generation”). They challenge us constantly with their demands and we work hard to meet their expectations. Work continues on many fronts.

PAWS has been an enormous success in many ways, but among them is its significant contribution to standardizing service delivery on campus. The PAWS team works in close collaboration with “co-developers” across the campus to deliver a wide range of services in an integrated way—a great convenience for users who now number in excess of 15,000 every day. PAWS supports several of the themes through the services it delivers, including Theme A (enhance the student experience, specifically e-learning and technology), Theme F (champion faculty recruitment and retention) and Theme G (build a high-performance organization, specifically in the area of service quality).

On the enterprise system front, we completed the implementation of our new student and finance systems (SiRIUS and UniFi), our human resources system (About-US) went through a major upgrade, replacement of our Library system began and a new e-payment system was introduced to support demand for online payments across the campus. We continue to struggle, though, to address the full cost of initiatives such as these. We now know, for example, that the cost of ongoing operations and system evolution for SiRIUS was underestimated when the project was proposed and steps are being taken to address the gap. We also significantly underestimated the cost of helping the user community accept the process changes and we need to address that as well. These are but examples of a systemic problem that needs to be solved. Despite these challenges these projects have introduced business process enhancements and improved service in many areas and so they connect to Theme G (build a high performance organization).

The USR-net project was completed, resulting in significant improvements to our campus computer network—core infrastructure that is the foundation for the services we provide to both internal and external users. This critical project was made possible by \$12 million of external funding (from CFI, the Province and our vendor partners) and it has paved the way for other important projects, including the development of our wireless capabilities and the migration of our telephone service to VoIP technology. This work connects directly to several of the themes,

but most directly to Theme C (accelerate research momentum), to Theme F (champion faculty recruitment and retention) and to Theme A (enhance the student experience).

We also devoted considerable attention to governance and policy issues. New policies were developed and approved for data use, e-mail and network security, and our long-standing computer use policy was rewritten to accommodate contemporary technologies and expectations. On the governance front effort was directed to both the governance of individual projects and to overall engagement of the community in setting institutional priorities and plans for technology. This work connects directly to Theme D (foster an engaged university).

### 3.1 Progress Report Card

A consolidated list of the “top ten” ICT priorities was provided in our last plan. This list reflected our most critical institutional requirements in information and communications technology over the 2004-2007 planning horizon.

1. PAWS: Operations and Evolution
2. Identity Management: Identification/Authentication of Users and Authorization for Services
3. ICT Security Upgrades
4. Multimedia Support for Learning Spaces
5. U-Who Evolution
6. Extended Hours of ICT Support
7. Support for E-learning
8. Student Mobile Computing
9. Desktop Renewal
10. Technology Readiness Program

Some progress was made on the most critical of these through internal reallocation of resources, but in other areas little was possible because the necessary funding was not made available.

#### Measuring Progress: The Rubric

A	Initiative was completed or is on track with respect to scope and schedule; required resources were provided.
B	Significant progress was made on pressing/urgent elements of the initiative; resources were reallocated from other service areas and/or some new resources were provided.
C	Progress was achieved only as a result of ongoing operations—some/no marginal improvement between needs and service level depending on whether operational funding level was maintained or reduced.
D	Very little or no progress made since resources were not made available.

**Progress on Commitments Made Prior to 2004 (Maintenance Initiatives)**

<b>Initiative</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
Renewal/Expansion of Campus Research and Education Network (USR-Net)	*			
Initiatives in Student Computing	*			
Implementation of New Student Information System (SiRIUS)	*			
Implementation of New Financial Information System (UniFi)	*			
Classroom Renewal (1997 Project)			*	

**Progress on Initiatives Proposed for Investment in the 2004 Plan**

<b>Initiative</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
Campus Portal Development (PAWS)		*		
Identity Management, Authorization and Authentication			*	
ICT Security (now includes requirements for physical security of some ICT assets)			*	
Multimedia Support for Learning Spaces			*	
Contacts Database Evolution (U-Who)		*		
Extended Hours of ICT Support			*	
Support for E-learning		*		
Student Mobile Computing (including wireless access)		*		
Desktop Renewal (including desktop support strategy)			*	
Technological Readiness Program				*

**Initiatives That Were Not in the Top 10 Priorities in the 2004 Plan**

<b>Initiative</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
Media Archive				*
E-Payment Gateway		*		
Institutional Reporting			*	

**Disinvestments** (freeing up some resources for reallocation, either in ITS or in other units)

- Interactive Voice Response System (IVR) and U-Star were eliminated.
- Faculty/Staff Dial-up service was terminated.
- Support for legacy IT protocols/technologies (e.g OpenVMS) was withdrawn.
- The Photography unit in DMT was closed down.
- The Media Resources Library in DMT was moved to the Library.
- The functionality provided by the My.usask portal in Arts and Science was migrated to PAWS. This made possible more campus-wide consolidation of ICT services and freed up resources in Arts and Science.
- Decommissioning of legacy ERP systems: in progress. HRS soon to be decommissioned, but no schedule yet to decommission SIS V1 and FRS.
- Some shadow administrative systems have been eliminated.

### Details: Progress on Initiatives Proposed for Investment in the 2004 Plan

Initiative	Grade	Overview of Progress
Campus Portal: Operations and Evolution (PAWS)	B	<ul style="list-style-type: none"> <li>• PAWS has become the one-stop, role-based, personalized, anywhere-anytime service and information mall for the University community—both service recipients (students, faculty, staff and alumni) and service providers (colleges and administrative units).</li> <li>• 15,000 unique users every day.</li> <li>• 70+ services; new services being added continually (e.g. community building tools, course management tools, assignment drop boxes, web tests, student registration, transcripts, T2202A, library tools, self-service address change, classified ads, professional development, alumni services, college tabs, pay information, electronic voting, surveys, wireless access for U of S guests).</li> <li>• Challenge: evolving the portal so that it continues to meet the University community's needs (new services, improved e-mail client, maintain high level of service availability, etc).</li> <li>• 2 FTE were added on a permanent basis (Services Manager, Technical Lead) but a funding gap remains.</li> </ul>
Identity Management: Identification, Authentication and Authorization (SSAM)	C	<ul style="list-style-type: none"> <li>• Manages authorizations for 88,000 users and 800+ services</li> <li>• Synchronizes passwords for many services.</li> <li>• Integrated with SiRIUS as data source for roles/authorization.</li> <li>• In progress: support for CAS single sign-on, SSAM V3 development.</li> <li>• Need to support Shibboleth and federated (inter-university) user identity management and authorization.</li> </ul>
ICT Security	C	<ul style="list-style-type: none"> <li>• The good news is that we have not suffered any major service disruptions in the past four years as a result of central ICT security problems, but the bad news is that Internet-based attacks and ICT security failures are a growing problem and continue to be a significant risk for the University. Incidents may severely disrupt critical operations, damage our reputation, and reduce productivity of instructors, students, researchers and staff.</li> <li>• The following were introduced during the past four years: port blocking (we block six million probe attempts daily), VPN service, new firewall technology, a packet shaper, Clean Access on the wireless network, Sophos anti-virus site license (for both University and home use), improved e-mail spam filtering and e-mail virus checking, Microsoft and Linux automated software update service, increased end-user support for laptop users.</li> <li>• We've seen increasing occurrence of theft of physical ICT assets and continuing risk to data assets.</li> <li>• Significant ongoing effort required to "keep up." Progress to date has been achieved only by "robbing" effort from other service operations/development tasks.</li> <li>• A new network security policy was introduced.</li> <li>• Continued education efforts underway.</li> </ul>

Multimedia Support for Learning Spaces	D	<ul style="list-style-type: none"> <li>• The capital budget historically assigned to develop technology-enabled multimedia classrooms was reduced during the previous planning cycle. We are no longer keeping pace with demands.</li> <li>• Wired and wireless network access requested for all new construction along with new classroom layouts (e.g. Academic Health Sciences, Law).</li> <li>• Wired network connections now available in all “shared” classrooms; wireless access available in some classrooms.</li> <li>• Successful introduction of technology for lecture capture and streaming video playback on a limited basis, as well as technology and processes to support student response systems (“clickers”) in many classrooms.</li> <li>• Cost to “modernize” teaching and learning spaces to meet today’s needs estimated at \$10 million or more, most of which is renovation cost.</li> </ul>
Contacts Database Evolution (U-Who)	B	<ul style="list-style-type: none"> <li>• One place for maintaining contact information (home, work) for students, employees, alumni and others</li> <li>• Key information source for identity management.</li> <li>• Integration with SiRIUS (registration, admissions).</li> <li>• U-Who now contains emergency contact information.</li> <li>• Work underway to include e-mail addresses and functional roles (e.g. departmental heads).</li> <li>• Self-service address change (including emergency contact information) improved service and reduced manual effort.</li> </ul>
Extended Hours of ICT Support	D	<ul style="list-style-type: none"> <li>• Help Desk hours increased to 69 hours/week during fall/winter terms to better support students (Learning Commons location).</li> <li>• Many system and network upgrades and patches are now performed outside of regular office hours to better accommodate needs of students, instructors, researchers and employees. IT staff who perform this work at night still have to come to work the next day.</li> <li>• Staff occasionally check service availabilities on evenings and weekends on their own “good will” but some service failures will not get resolved until the “next day” or “Monday.”</li> <li>• Credit card companies require 24x7 handling of alarms relating to systems that collect payments online using credit cards. The U of S must do this or we will not be able to collect payments online using credit cards.</li> <li>• Availability of some services has been improved through the introduction of new hardware (network, server) but there are ever more expectations/needs for 24x7 availability for an increasing number of services, for a variety of reasons: <ul style="list-style-type: none"> <li>• more students taking courses through alternate delivery formats to accommodate work schedules;</li> <li>• students taking online courses and/or using online services (such as applying for admission, registering for courses, paying fees) may be doing so remotely while physically situated in other provinces or other countries and thus in different time</li> </ul> </li> </ul>

		<ul style="list-style-type: none"> <li>zones;</li> <li>• researchers do not work “9 to 5” schedules and their remote collaborators may be in different time zones;</li> <li>• employees require access to some services (such as e-mail and calendar) when travelling; and</li> <li>• CLS is expected to operate 24x7 and so 24x7 network availability is required to meet their needs.</li> <li>• 24x7 on-call and problem resolution costs will be significant. This requires network, server, application, database and end-user support.</li> </ul>
Support for E-learning	C	<ul style="list-style-type: none"> <li>• A number of new services were introduced: <ul style="list-style-type: none"> <li>• blogs;</li> <li>• wikis;</li> <li>• Elluminate web conferencing;</li> <li>• Teach-US IT (online IT learning materials);</li> <li>• survey tool;</li> <li>• electronic assignment drop boxes (service migrated from my.usask);</li> <li>• online exams (service migrated from my.usask);</li> <li>• student response system technology (clickers);</li> <li>• lecture capture/streaming video technology (Apresso); and</li> <li>• Blackboard (formerly WebCT) V6 upgrade.</li> </ul> </li> <li>• About 40 online courses/course modules developed for TEL.</li> <li>• Blackboard (formerly WebCT) usage is doubling yearly: now used in 450 course sections; almost 13,000 student-class registrations; 8,500+ unique students.</li> <li>• PAWS My Courses usage is also high.</li> </ul>
Student Mobile Computing (including Wireless Access)	C	<ul style="list-style-type: none"> <li>• Introduced highly successful Laptops4U program in the Campus Computer Store. Supports how students want to work and reduces need for student computer lab space on campus.</li> <li>• Close to 400 wireless access points will be in place by January 2008. This provides coverage to about 60% of the campus.</li> <li>• The introduction of Clean Access and associated processes stopped “infections” on the wireless network.</li> <li>• Allocated 1 FTE towards helping students configure laptops and resolve problems relating to anti-virus, wireless access and software updates</li> <li>• Laptop and tablet computers available for loan at libraries.</li> </ul>
Desktop Renewal (including desktop support strategy)	C	<ul style="list-style-type: none"> <li>• Automated software update service introduced for Windows and Linux machines.</li> <li>• Campus Computer Store successful in providing competitive pricing on hardware and software, along with a high service level</li> <li>• Introduced a faculty desktop/laptop renewal and support plan (all new faculty, some help for current faculty).</li> <li>• Usage of ITS desktop support services is increasing (fee for service).</li> </ul>

Technology Readiness Program	D	<ul style="list-style-type: none"><li>• Very limited progress possible because of lack of funding.</li><li>• Developed or acquired online training resources for some standard software packages, including Word, Excel, PowerPoint and Access. Success had been mixed and uptake has been slow.</li><li>• Now developing our own online resources for U of S-specific services.</li></ul>
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## **4. Strategic Initiatives: 2008-2012**

Nine strategic initiatives are presented for consideration in this section, five of which form the substance of Part Two of the plan. The purpose of this section is to outline the nine initiatives, indicate their importance and their urgency and, where possible, indicate what work is presently being done and when new work is expected to begin.

For initiatives 1-5 only summaries are given here; full details, including costs and sources of funding, are provided in Part Two. More detailed descriptions are provided for initiatives 6-9.

The nine initiatives are:

1. Support the University's Information Requirements for Planning, Performance Management and Institutional Reporting
2. Enhance the ICT Environment to Enable and Increase Research Success
3. Enhance the ICT Environment to Enrich Teaching and Learning
4. Simplify Business Processes and Improve Services
5. Develop Business Continuity Plans and Address ICT Security Risks
6. SiRIUS/PAWS: Eliminate the Funding Gap for Operations and Evolution
7. Provide Stable and Predictable Funding for New System Development
8. Convert the University Telephone System to VoIP Technology
9. Address ITS Space Requirements

#### **4.1 Support the University's Information Requirements for Planning, Performance Management and Institutional Reporting (Details in Part Two)**

The University of Saskatchewan (like universities everywhere) is struggling to address the demands for information from external agencies, governments, the public and other stakeholders. As well, our senior executives, deans and department heads are called upon to make critical business decisions that require timely and accurate information, and that information is not always available on short notice. We need to be better positioned to meet these requirements than we are now.

There are a number of reasons why it is difficult for us to get the information required, among which are the following:

- New system installations, such as SiRIUS, UniFi and About-US, improved services to students and others, and increased both the amount and the quality of data available at the University, but these systems were implemented primarily for operational purposes not for informational purposes. They contain an abundance of operational data but little high-level information. For example, while SiRIUS contains a great deal of data about students (such as the number of registrations in each class), this data must be transformed with appropriate business rules to create informational elements (such as “fte” enrollments). Additionally, our individual systems may not contain all the data required by the University to create the information it needs since that information often draws on data from multiple systems.
- Our present processes for converting data into information are often *ad hoc* and use a cumbersome collection of tools, many of which are not well suited to the task. As a result, the effort required to create the information is high (and so is the wait time to get the information). There is also a risk of error in the information provided, which can affect funding (for example, the Saskatchewan University Funding Mechanism, SUFM) or reputation (for example, *Macleans* ranking).
- Our operational systems contain current-value data, not historical data. We do not have a central depository that contains (all) the historical data (or information) required to perform longitudinal analyses such as modeling or forecasting.
- The University has not clearly defined its key performance indicators (KPIs) or benchmarks. This work is needed to determine the information elements that must be created and stored.

Work has been underway since May 2007, led by the Director of Information Management reporting to the AVP ICT, to develop an information strategy for the U of S. This work will address our institutional challenges in this area, focusing on issues relating to people, processes, organizational responsibilities and technology. The primary deliverable from the work of this initial year will be a comprehensive written report culminating in a recommended strategy for managing our information assets and anticipated implementation costs.

This initiative has three components:

- Develop the information strategy (underway). This strategy will address issues and deficiencies identified in our current information management practices, identify risks associated with those deficiencies, examine practices in place at or planned for peer

institutions and present a strategy for managing campus information assets as the University progresses into its second century.

- Establish the Director of Information Management position on a permanent basis within the Office of the AVP ICT to assume a lead role in managing our data/information vision, goals, priorities, design principles, and operating policies in support of the strategic directions and overall business goals of the University. The Director of Information Management will also facilitate the implementation of the information strategy.
- Implement the recommended information management strategy in order to provide the information that the University requires for evidence-based decision making, planning, performance measurement and reporting, in a timely and cost-effective manner.

Even without an institutional information strategy or information architecture, some work is already underway to enhance our longitudinal and operational reporting capabilities to meet immediate needs. Since the flow of data from transactional system to information systems is a key component of an information strategy, these initiatives will factor into the development of the University's information strategy.

- Institutional Analysis continues to develop iDat as an institutional reporting system that will enhance longitudinal reporting capabilities.
- SESD and FSD are currently pursuing the implementation of the SunGard Operational Data Store (ODS) product to replace the current student data store (Ganymede) and to create a data store for financial data to support student and financial operational reporting needs.

Full details are provided in Part Two.

## **4.2 Enhance the ICT Environment to Enable and Increase Research Success (Details in Part Two)**

Research today is highly collaborative, involving teamwork, multi-disciplinary approaches and partnerships among faculty, students, universities, governments and industry. As well, it requires the collection and analysis of very large datasets. Research is also entrepreneurial and competitive.

Research relies heavily on ICT to collect, store, manage, integrate, mine, visualize and analyze data. This has long been true in sciences but it is now true in all disciplines, including the arts and humanities. ICT enables communications and collaboration among researchers anywhere in the world without the necessity for travel. ICT often provides researchers the “competitive” advantage they need to be leaders in their field.

This initiative will enhance the University’s research ICT environment (generally referred to as *cyberinfrastructure*) so that it helps increase research productivity, helps attract and retain graduate students and faculty, enables electronic communications and collaboration, supports experiential and discovery-based learning and helps fosters University engagement.

This initiative consists of two components.

The first component fulfills recent service commitments (such as the Digital Media Research Centre in Arts and Science and WestGrid) and builds on recent improvements to, and expansion of, the ICT research environment (examples include GIS, high performance computing and 3-D visualization). These service improvements were funded primarily from one-time (“soft”) monies (including ITS contingency) without an increase in operating budget. We intend to use ITS contingency to continue providing these services this year and during the four year planning cycle (subject to the availability of funding). The funding will cover staff salaries and benefits (primarily to extend existing term positions) in order to:

- Continue support for the use of digital media technologies especially in arts and humanities (through the Digital Media Research Centre in partnership with the College of Arts and Science).
- Continue support for Geographical Information Systems (GIS).
- Continue support for advanced 3-D visualization (in partnership with the Saskatchewan Resource Council).
- Provide (and support) more ICT tools for electronic communications and collaboration (i.e. beyond e-mail).
- Increase the ICT advice and assistance available to researchers in developing research proposals and to those undertaking research projects that have a significant ICT component.
- Provide ICT advice and assistance to new faculty to help them establish their research and teaching programs quickly.
- Continue to provide ICT advice and assistance as required within the University’s accountability process for CFI proposals.
- Help implement the mass data storage and AccessGrid collaboration facilities recently approved by CFI to be located on our campus (in collaboration with Dr. Ray Spiteri, principal investigator, and WestGrid/ComputeCanada).

- Operate the High Performance Computing Research Facility recently developed in the Spinks addition to house specialized research servers that require high electrical and air conditioning capacity.

New funding will be required to further enhance the ICT research environment in the following ways:

- Provide system management support to free researchers from the time-consuming and complex tasks relating to workstation and server administration (such as applying system upgrades and security patches).
- Provide automated tape backup services for research workstations or servers to reduce the risk of losing research data in the event of system failure.
- Support the expanded use of ICT tools by more researchers in more disciplines.
- Provide ICT staff resources to help manage research projects that have a large ICT component.
- Provide additional support for researchers and instructors that require 3-D visualization.

Full details, including costs, are provided in Part Two.

### **4.3 Enhance the ICT Environment to Enrich Teaching and Learning (Details in Part Two)**

Over the past few years the demand for ICT tools used to support instruction on this campus has increased dramatically. Technologies that have been requested recently include student response systems (“clickers”), Elluminate<sup>4</sup>, Apreso (now Echo360)<sup>5</sup>, blogs, wikis, PAWS course tools, podcasting, LON-CAPA<sup>6</sup>, online surveys and many others. In addition to an increasing variety of tools, the number of instructors and students to be supported and assisted in using such tools has also increased. The demand for new tools continues unabated and this, in turn, increases the demand for support. The services provided support both face-to-face and online instruction. Some tools introduce new capability; others help by streamlining long-standing functions such as grading.

ITS activity in this area is driven largely by requests from colleges and individual instructors, from instructional designers and CCDE leaders, from ULC staff and the E-learning Priorities Committee, from the Academic Support Committee of Council, and from information gleaned from staff research. ITS staff also participate in Campus SK committees and activities, and are involved with faculty on campus in research related to teaching and learning technologies.

Part of this initiative is and will continue to be funded from existing ITS sources (including contingency) but to move further will depend on securing new funding.

New funding will be required for some or all of the following:

- to provide ongoing maintenance and support of web application to support SEEQ online course evaluations;
- to provide tools and services to support the use of online examinations (includes exam databank and automatic exam creation);
- to provide tools and services to support the use of e-portfolios for students;
- to provide additional tools for delivering and managing online course elements integrated with PAWS and/or a course management system; and
- to extend hours of support for core ICT services.

Supporting teaching and learning through innovative technologies is an important part of the ICT mandate and we will continue to provide both leadership and support. This enriches the student experience both by exposing them to new tools and by assisting their learning.

Details are provided in Part Two.

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<sup>4</sup> Elluminate is a web-based collaboration environment that enables instructors to have real-time discussions with students supported with PowerPoint slides, web sites, whiteboards and shared applications.

<sup>5</sup> Apreso/Echo360 is a system for easy lecture capture and replay using rich media format.

<sup>6</sup> LON-CAPA is a web-based course management system with particular emphasis on automated assessment. It features a large inter-institutional repository of shared instructional and assessment resources.

#### **4.4 Simplify Business Processes and Improve Services (Details in Part Two)**

The goal of this initiative is to help the University improve its services. We will do this by providing technical infrastructure, support and training that will allow business units on campus to simplify their business processes and decrease the turnaround time of many services.

This overall initiative will consist of a number of projects, each targeted at making processes simpler and more efficient through the use of new or improved technology.

Among the key deliverables of this initiative are:

- evolution of the University's identity management, authorization and authentication system so it continues to meet institutional needs;
- a document management and workflow system for the campus;
- a web page content management system for the campus;
- assistance to the College of Dentistry in implementing their new dental clinic system;
- a collaboration with the Consumer Services Division to develop an online campus store;
- a problem tracking system to support operations in ICT help desks on campus, both ITS' and others;
- a system to enable students to review progress toward a degree while online and allowing colleges to automate degree audits; and
- more online services for students, including enabling students to purchase print pages online for the Campus Print Accounting System.

The primary objectives are to enable units to employ automated business processes wherever possible (in areas such as electronic document management, electronic web page content management and electronic workflow) and to increase the number of online, self-directed services for students and staff, thus providing anywhere, anytime access.

Expected outcomes from this initiative include:

- Improved services to students by increasing the number of automated processes. For example, student appeals can be automated so the process begins with a student entering an online form, which will automatically be directed to administration for processing.
- Reduced time invested by departments and units in web publishing by providing electronic support for updating web pages.
- Accurate and up-to-date web content and reduced dependency on IT support by providing easy-to-use automated publishing, versioning and archiving functionality.
- Reduced paper use and paper flow for business processes at the University. Reduced time to complete a business process because paper flow is replaced with electronic processes.

Details are provided in Part Two.

## **4.5 Develop Business Continuity Plans and Address ICT Security Risks (Details in Part Two)**

The University relies on ICT for its teaching, learning, research and business activities. As doing academic or administrative work becomes synonymous with using ICT, our community (students, instructors, researchers, staff and even the public) expects service availability that approaches 24x7<sup>7</sup>. A recent survey of several administrative departments indicated that the maximum tolerable downtime is one day for the ICT services upon which they rely.

In reality, system failures may cause ICT services to be unavailable for days (component failures), weeks (major server failures) or even months (fire or vandalism of a computer or network centre such as those located in the Administration or University Services buildings). Likewise, Internet attacks can disrupt services for periods of days or weeks (until the compromised servers or desktops are “repaired”). As was noted in *The Second Integrated Planning Cycle: Emerging Trends and Themes*:

“Most aspects of the University’s activities are increasingly reliant on technology in general and major systems in particular. System failure, encroachments from external sources ... are all foreseeable challenges”.

The affected services may include student registration, grade entry, payroll, purchasing, accounting, donor processing, e-mail, on-line course content delivery, PAWS, the campus website, the Library, campus network, Internet and telephone services.

The University has been and will continue to be subjected to security incidents, with impacts ranging in severity from e-mail spamming to reports of copyright infringement to virus infections to major interruptions in availability of key ICT resources. The data stored in our research systems, the systems that store student records and our financial systems represent a valuable target for intruders.

Ensuring the safety and security of our systems, our data and our users is a critical responsibility. We must be continually vigilant and exercise due diligence in mitigating risk to our ICT infrastructure and to the business processes that rely on that infrastructure. The collaborative nature of research and education requires a level of connectedness and openness that complicates the use of ICT security controls, and the largely unfettered access provided to students, faculty and staff (including increasing numbers of visitors and guests) makes the University an especially difficult environment to protect. Yet we must do all we can to ensure the security of our systems and our data; to safeguard against service interruptions, computer misuse, unauthorized disclosure of University data and the damage to the University’s reputation that could result from a serious security incident; and to protect our users.

This initiative will close the gap between the expectations for ICT service availability and the University’s ability to meet those expectations. It will reduce the likelihood of significant disruptions to key academic and business processes due to system failures or security breaches as

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<sup>7</sup> While no individual student, faculty member or staff member requires all services to be available at all times, the needs of the institution as a whole combine to produce an expectation approaching 24x7, with little tolerance for service disruption.

well as improve our ability to restore services following those failures. It will also help protect institutional data from unauthorized disclosure.

The initiative has three components.

- Develop the University's business continuity and resiliency plan related to significant failures of institutional ICT systems.

The plan will be developed in consultation with colleges and administrative units as well as with senior University management. In order to develop the plan, the University must identify the impact of system failures of varying durations as well as the strategies, with the associated costs, that can be undertaken to reduce the risk of failure, to reduce the recovery time from system failure, and to continue University operations in the event of a failure. The plan will contain only the strategies that cost-effectively address the institution's tolerance for risk.

- Implement the business continuity and resiliency plan.
- Improve the security of University ICT assets and improve the University's response in the remediation of ICT security breaches.

New funding will be required for the second and third components listed.

Details on this initiative, including costs, are provided in Part Two.

## 4.6 SiRIUS/PAWS: Eliminate the Funding Gap for Operations and Evolution

Both SiRIUS and PAWS are operating with a budget shortfall. Presently the deficits are being covered from a variety of one-time sources. This is not sustainable. Critical campus services are at risk. Both have been to PCIP several times. Some funding has been provided, but significant gaps remain.

### SiRIUS

The SIS Division (now part of SESD) is the unit responsible for the operation, support and evolution of our new student information system. The implementation was declared complete in the fall of 2006 but parts of SiRIUS have been in operation for more than two years. Now that we have been through two full academic cycles we have a much better understanding of what is required to support the system than we did when estimates were provided to the Board of Governors in 2003. We now know that the operating budget approved then (\$1.67 million) is insufficient. A request was submitted to PCIP in May 2007 to eliminate the gap.

A two-stage increase was requested: an immediate, one-time allocation of \$800,000 to cover the period to August 31, 2008 to permit the extension of some critical term positions, followed by a permanent adjustment on the order of \$1 million to make these positions permanent. \$300,000 was allocated on a permanent basis and \$150,000 was transferred from ITS on a one-time basis. This leaves an immediate gap of \$350,000 to extend contracts to August 2008 and a decision to be made on the \$1 million permanent adjustment. This request is consistent with Audit Services' recommendation to senior administration.

SiRIUS is based on a commercial product—SunGard Higher Education's Banner. As the Si! Project neared completion it became apparent that the cost to operate, support and evolve the new system had been underestimated in the following respects:

- i. The extent to which the purchased software had to be modified was not anticipated at the time the original estimates were made. It was estimated that the purchased product would meet 85% of our intuitional needs, with the remainder met by either changing business processes or modifying the software, and the budget was set accordingly.

Developing a full understanding of which processes could be changed required that the new system be operational through a number of academic cycles. That has now happened, and while the institution has been very successful in changing some practices, others that are core to the University's business could not be changed at this time. In some cases, grade approval for example, our processes are grounded in academic regulations. In other cases, changing practices would require some business units to take on considerable manual processing, estimated to require 10 FTE annually.

It must be noted that not all modification is discretionary; some modifications are required by mandatory processes and practices (to comply with regulations and policies), others stem from core academic principles, while others are required to interface with our technical infrastructure (such as U-Who and SSAM). A full list of the customizations and discussion of their rationale was provided as part of the PCIP submission and is available on request.

- ii. There is still significant work required in order for the full campus community to use the new system effectively and leverage the substantial investment already made.

The purpose of the *Si!* Project was to implement a base student information system and migrate core business processes into it. Significant work remained at the end of the implementation project, either because it had been removed from the project's scope or because new opportunities for improving business processes had been identified, the magnitude of which was not anticipated in the original operating budget. This work has been taken on as part of the ongoing evolution of our student information system.

There were a number of reasons why some of the intended work was not completed during the implementation project. SiRIUS became operational in stages, and the transition to supporting it occurred earlier than expected. This consumed resources that would otherwise have been allocated to implementing other parts of the system.

Additional requirements were added as the work progressed and new needs emerged, such as implementing a separate system to support student recruiting, implementing an examination-scheduling application, automating admissions for some non-direct entry colleges (Dentistry and Pharmacy & Nutrition) and building a reporting system.

Unanticipated costs arose, both direct and indirect, including office renovations, adding additional space for training, and extending the contracts of staff supporting the work of the colleges (the "coaches"). Finally, obtaining trained staff was difficult early on in the project's life cycle, meaning some work had to be deferred.

- iii. Early in the *Si!* Project it was decided, at least implicitly, that new funding would be sought to support ongoing enhancements to the system. We now understand that there needs to be ongoing capacity to facilitate necessary enhancement, rather than relying on episodic funding requests to support critical enhancements such as degree audit.
- iv. While we knew support for reporting was a critical requirement, the need to build a full reporting infrastructure to create the numerous customized reports and data extracts needed to support business processes was unanticipated when the original budget was set. For performance and security reasons a separate technical infrastructure beyond the base Banner product was subsequently found to be necessary. This led to the "emergency" development of Ganymede/Publisher, which has already become crucial to the operations of colleges and administrative units. The funding to build it came from savings in the implementation project, but there is no funding available now to operate it or to continue its development, and it certainly was not part of our planning for this project.

The submission to PCIP laid out the consequences of not providing the increased funding required. Most directly we would lose a significant number of the highly trained staff on which the success of this initiative depends. These could not be replaced later on without a significant reinvestment in training costs. Other consequences include risks to business processes, jeopardizing some contractual obligations, providing inadequate support to users, and being unable to meet demands for new functionality.

We have been far from extravagant in our expenditures on our major administrative systems. Indeed, comparing our expenditures with those of other institutions indicates that our expenditures, while substantial, have been quite modest:

<b>Institution</b>	<b>Total Implementation Cost (Student, HR, Finance)</b>
U of Saskatchewan	\$18 million
U of Alberta	\$50 million
McGill	\$30 million

We will not benefit as much as we might from the great work our staff have done implementing them if we fail to provide adequate ongoing support for the operation and evolution of these crucial institutional systems; we can't let that happen.

## **PAWS**

PAWS has been a resounding success for the University. With more than 15,000 users every day and a broad base of service providers spanning the campus it has achieved its goal of becoming the campus standard for online service delivery. It serves the entire University community – students, faculty, staff, and alumni – and connects with the goals of integrated planning in many important ways. It is a central element in our thrust to improve service delivery, offering online web-based access to a wide range of University services from anywhere at any time. It has also played an enormously important role in standardization by consolidating institutional processes for identity and access management, by providing standard tools for course management, collaboration, communication and personal calendaring, and by providing a standardized single-sign-on interface to our administrative support systems. But it has been running on a shoestring budget.

A number of submissions have been made to PCIP over the past three years (most recently in the fall of 2006) to provide permanent base budget funding to address the cost of operation, support and evolution. The present cost is close to \$800,000 annually. \$150,000 was allocated in the spring of 2007 and \$315,000 has been found from other sources (Student Computing Fund, System Development Fund and ITS operating funds), but this leaves an annual shortfall of more than \$300,000. ITS has been covering the deficit from its contingency for four years and this is not sustainable. A number of critical positions are on term contracts and this is a serious risk.

With the staffing levels in place now we struggle to meet even the most pressing needs. We can defer requests from our campus community for only so long. New services need to be deployed, we cannot turn away requests for assistance from students and faculty to the ITS Help Desk, and we need to support faculty in using PAWS in their teaching.

New permanent base budget funding in the amount of \$300,000 is requested to close the gap.

## **4.7 Provide Stable and Predictable Funding for New System Development**

Bob Rae refers to “the tyranny of one-time funding.” Following several external reviews in the 1990s it was acknowledged that the University was under-invested in support for new system development. This meant that critical institutional projects had to seek funding on a one-by-one basis, frustrating project proponents and stifling planning. To remedy this, in 1999 the University established the System Development Fund (SDF) at \$1 million per year to support the development of new systems. This provided those with executive responsibility for systems development with the capacity to develop longer term plans so that emerging priorities could be addressed within a longer term comprehensive strategy.

This was an enlightened approach but, unfortunately, the SDF has been eroded in the intervening years through permanent allocations to ongoing requirements (such as operating support for About-US and SiRIUS). In 2007 less than a third of the original \$1million remains for the purpose for which the SDF was intended, which means we are back to seeking funding on a project-by-project basis.

We do not secure the funds necessary to repair roofs or renovate classrooms one project at a time, nor should we secure funding for critical ICT projects one project at a time. A better model is to determine how much we are prepared to invest in this technology, allocate it and let our ICT governance model make our technology decisions rather than forcing PCIP to do it.

We are calling for a return to the SDF model as instituted in 1999, with funding to reflect 2007 demands and 2007 costs. Both demands and costs have escalated since 1999, but what is left in the SDF is approximately \$385,000 in 2007 dollars—far short of what is needed to meet 2007 demands.

Our request is for a \$2 million allocation to the System Development Fund, beginning in year one of the new planning cycle.

## **4.8 Convert the University Telephone System to VoIP Technology**

Responsibility for telephones and telephone services was transferred from FMD to ITS part way through the last planning cycle, along with the Telephone Services staff, budget and existing practices, in order that planning for voice communications could be strategically aligned with planning for data communications which was already the responsibility of ITS.

Work already in progress to renew the campus data network (through the USR-net project) had already set the stage for the University to capitalize on the convergence of technologies for voice and data communications. With the assistance of funding from CFI, the Province's Innovation and Science Fund and contributions from vendor partners we were well-positioned to follow industry trends to move to Internet-based telephony (voice over IP, or VoIP).

Because ITS staff were intensely engaged in completing the USR-net project (10,000 data connections) there was little time available to work on the wholesale conversion of our 6,000 telephones. Some preliminary work, mostly in areas of new construction, resulted in the introduction of some 600 VoIP phones to the fleet, but more detailed planning awaits.

This is not urgent work since there is still life left in our conventional telephone system, but it is work that will need to be done within the next planning cycle since vendors will not support two technologies much longer. We will begin detailed planning in the first year of the new planning cycle and present a plan and budget to PCIP for work to be completed over the next three. We estimate the total cost to be on the order of \$3 million.

## **4.9 Address ITS Space Requirements**

Staff in ITS are scattered in some dozen locations around the campus—from the main office area in Physics, to the space for the Networking group in Peterson, to the Help Desk space in Arts, to Technical Services in Education. Servers too are located in several different areas. It is very difficult for staff to work when the facilities for which they are responsible are scattered and when people with whom they work closely aren't close at hand.

The size of the ITS staff complement, the highly specialized nature of some of the space (such as enhanced power and cooling for server rooms), and the diversity of responsibilities makes it extremely difficult for the University to meet ITS' needs. Nevertheless we need to do much more than we are presently doing.

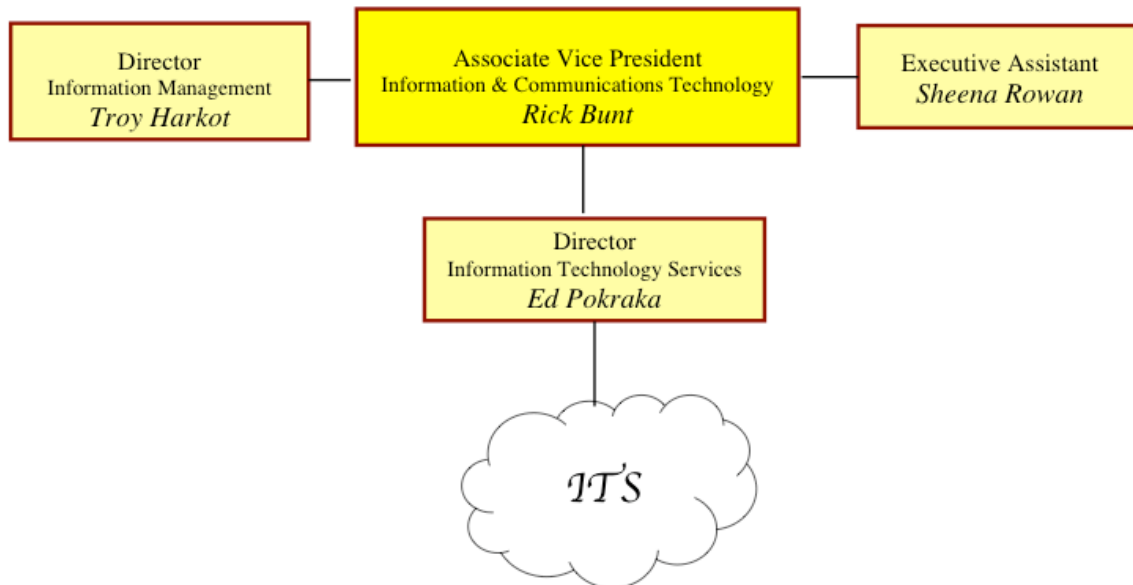
Several potential solutions are under investigation, including the University Services Building expansion and the Place Riel expansion. We will continue to work with Space Planning and the IPO to evaluate options and develop the necessary plans. High priority requirements include:

- office space for every staff member;
- co-located space for staff who work together;
- secure server rooms with enhanced power (including UPS) and cooling;
- more accessible space for the Help Desk and associated services; and
- a main office that meets contemporary professional standards.

# 5. Resources

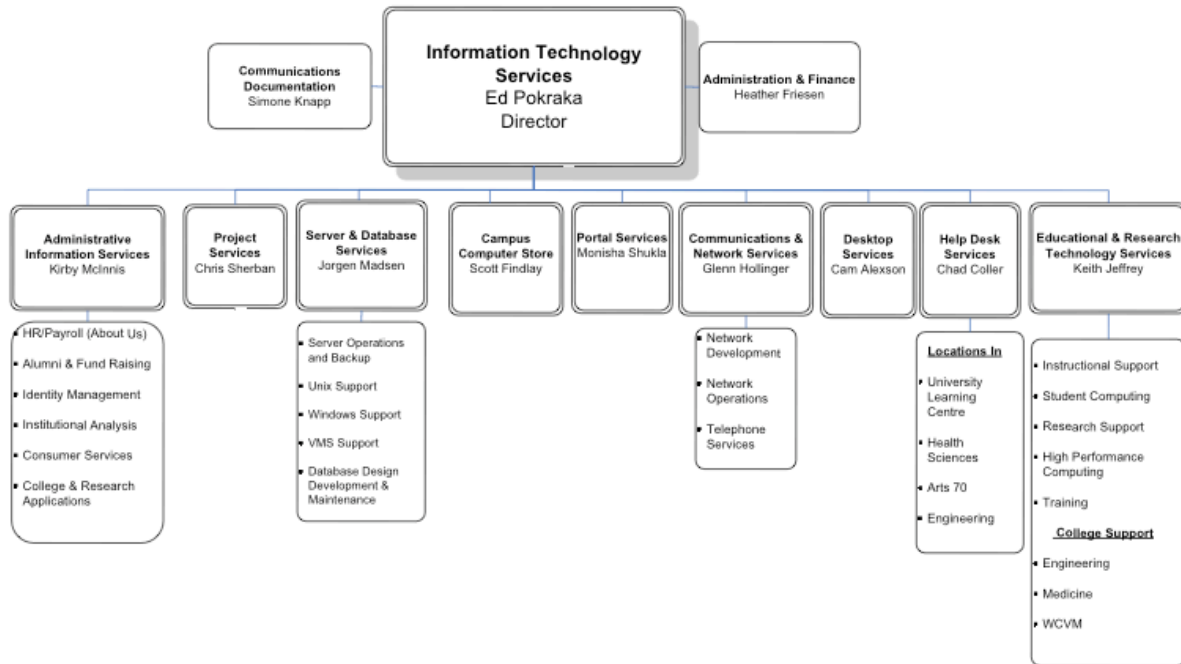
## 5.1 The People

The Associate Vice President, Information and Communications Technology, has three direct reports: Ed Pokraka (Director of Information Technology Services), Troy Harkot (Director of Information Management) and Sheena Rowan (Executive Assistant). Two other Directors work closely with the AVP ICT but their line reporting is elsewhere: Colleen Fitzgerald (Director of Educational Media Access and Production) reports to the Provost and Jonathan Moore-Wright (Director of Student Information Systems) reports to the AVP SESD.



**Information and Communications Technology: Organizational Chart**

ITS is a large and complex unit, with close to 150 staff members, roughly 50% of whom are soft-funded (paid for from fee-for-service agreements or from support contract agreements). This heavy reliance on soft-funded staff for critical institutional work is a major risk.



**Information Technology Services: Organizational Chart**

## 5.2 The Funding

The cost of an ICT project has four main components:

- the acquisition cost, which includes the cost of the software and the cost of the hardware (such as servers) on which the software will run;
- the implementation cost, which includes the cost of people to do the implementation (which may involve both our staff and external consultants) and the cost of any training that may be necessary for them to do the implementation;
- the cost of managing the change that the new project introduces to the way we work, which includes the cost of training users and supporting them as they work through new processes that may be required; and
- the operations and evolution cost, which includes maintenance contracts, equipment upgrades, support staff, and, periodically, new functionality.

The first three of these costs are largely one-time costs; the fourth is ongoing.

We fund our ICT, whether it's individual projects or ongoing operating requirements, from a variety of sources. Generally ITS is responsible for supporting initiatives that have campus-wide application, while individual units address local projects.

ITS base budget provides funding to operate the University's technical infrastructure (the network, the servers and the services) and to support users (Help Desk and Training Services). There is limited funding available to support new development. New projects depend largely on other sources for funding. Some of these are ongoing funds, such as the System Development Fund and the Student Computing Fund, and some are allocated on a year-by-year basis, such as

the Capital Equipment Fund. Major projects seek their funding through the Major Projects Planning Process.

The following is a brief description of the various funding sources for campus ICT:

**The System Development Fund.** This annual budgetary allocation, established as \$1M in 1999 but now much less (see Section 4.7), provides funds for the development of administrative support systems across campus. The funds remaining are used to meet emerging needs on a year-by-year basis. In recent years the SDF provided partial support for the E-Payments project, for U-Who evolution, for PAWS, for SSAM, and for several smaller projects.

**The Student Computing Fund.** This fund (\$545,000 annually) was created with the consolidation of student computing fees into tuition, and is used to provide support for campus-wide student computing initiatives such as expansion of wireless access, the new campus-wide print management system and PAWS. The fund is managed by the Project Manager for Student Computing, who reports annually on its allocation to both the Director of ITS and the Associate Vice President, ICT.

**The Capital Equipment Fund.** An annual allocation from the Capital Equipment Fund to the AVP ICT supports campus-wide technology projects, specifically the acquisition of ICT infrastructure to meet campus-wide needs. In recent years slightly more than \$1million has been provided (\$1.15 million for 2007-2008, reduced from \$1.25 million the previous year) and the funds have been used to provide infrastructure for student computing, for wireless access points, or new campus e-mail and web servers, for the USR-net project, for network connections in classrooms, for new servers for the Library and for PAWS. Some funding has been allocated annually for the classroom upgrade project. Some of this funding is used for the purchase and installation of the multimedia equipment and computer connections; the rest goes to the physical renovations.

**Campus-Wide ICT Services Upgrade and Maintenance Fund.** Two central University funds provide for the ongoing operating costs of hardware and software that is used to provide campus-wide ICT services. One fund covers network and server hardware (such as Internet access and maintenance contracts) and the other covers software (such as the license maintenance costs for Oracle and Blackboard, formerly WebCT).

**Major Project Funding.** The Board receives submissions for major ICT projects, such as the Si! and UniFi projects, where the magnitude of the funding is such that it cannot be accommodated from regular sources (normally defined as exceeding \$500,000). The decision to proceed is made on the basis of a detailed proposal that addresses all costs, including equipment, software and staff, for implementation and ongoing operation. Once a project is approved the Project Manager manages the funds in consultation with the sponsor(s), with budgetary oversight provided by the project's Steering Committee.

### “Soft” Funds

It is important to understand that many ITS staff members (roughly 46% as of summer 2007, which amounts to almost 70 FTE) are funded from *ad hoc* sources: fee-for-service, project funds, TEL funds or contingency. As the following table shows, many work groups that provide core, campus-wide IT services (including help desk, training and PAWS) are funded primarily outside of the base operating budget. This heavy reliance on non-base funding for ongoing operations is a significant risk and makes ICT planning extremely difficult.

ITS Work Group/Team	FTE Base-Budget	FTE Non-Base Budget	FTE Total
Administrative Information Services	12.50	15.25	27.75
Desktop Support Services	1.00	13.00	14.00
Instructional Support (ERTS)	3.00	3.00	6.00
Training (ERTS)	1.00	4.00	5.00
Help Desk Services	8.50	8.50	17.00
Portal (PAWS) Support and Development	2.50	4.50	7.00
IT Project Management	1.00	1.50	2.50
Technical Services (Computer Repair)	--	5.00	5.00

### Staffing Assignments For Some ITS Work Groups (Summer 2007)

Every year ITS must secure over \$4 million beyond its base operating budget just to cover staff salaries and benefits; the actual cost is higher because it must include non-salary, staff-related costs such as equipment, furniture and professional development. Much of this funding comes from fee-for-service, one-time project funds and special programs (such as TEL). Our current financial projection is that the level of funding presently available from some of these sources will not continue through the planning cycle. ITS plans to use contingency funds to maintain current services and service levels as much as it can. After that, unless other sources are found some services will be reduced as staff positions have to be eliminated. This is a significant risk for the University.

ITS has always used soft funds, including contingency, to provide core ICT services that are used by students, instructors, researchers and staff in all colleges and departments. ITS will continue to use contingency during the next planning cycle:

- to augment the base budget positions in various ITS work groups (for example, ITS currently augments the help desk and training groups with three positions funded from contingency);
- to fulfill existing support commitments (to Arts and Sciences’ Digital Media Research Centre and to WestGrid, for example);

- to cover the costs associated with supporting technologies recently adopted in teaching (such as student response systems, clickers) or in research (high performance computing, for example);
- to deploy and support new technologies required for teaching, learning and/or research (the development of an instrument for online course evaluation, for example, as well as for the analysis and reporting of those results);
- to support technologies that can be used by colleges and administrative units to streamline and automate business processes (such as document management or workflow);
- to provide and support an improved set of ICT tools for electronic communication and collaboration (desktop videoconferencing, web videoconferencing and others);
- to research emerging technologies such as tools to support new teaching and learning paradigms or e-portfolios; and
- to lead the development of a University business continuity and resiliency plan to help mitigate our vulnerability to major ICT service outages.

The five initiatives outlined in Part Two of this plan contain more information about our planned use of ITS contingency funds. The total requirement for contingency for the five initiatives exceeds the available contingency. Specific allocations of contingency will be finalized after the initiatives and priorities of the University's next 4-year plan are finalized.

# Appendix

## Major ICT Projects Inventory

### Introductory Notes:

- The set of tables in this Appendix represents an inventory of potential projects related to campus-wide ICT services over the next five years—2007-2008 followed by the four years of the next planning cycle. The projects listed reflect the expressed needs of instructors, students, researchers, colleges and administrative units. Some also reflect ICT services provided/planned at other Universities.
- The list of projects is not given in priority order. Priorities will be set after further consultation with the campus community. This consultation may also change the scope of some projects and will undoubtedly result in additions to the list. Some early examples of additional projects are given in later tables.
- Even if no new funding is allocated for these projects, the University will need to address the pressing needs within many of the projects proposed over the next five years. This will require re-allocation of central ICT resources and/or re-allocation of college, department or administrative unit resources. Central planning and coordination can contribute to a collaborative, integrated approach rather than the piecemeal, *ad hoc* development that might happen otherwise.

### Summary of Consultation with Council Committees:

- The list of projects has been discussed with the Academic Support, Budget and Planning Committees of Council, with CABIS and the Enterprise Systems Planning Committee, and with ACIP and PCIP.
- There was general agreement in the committees that essentially all of the proposed projects will be required over the next five years.
- Some additional projects for inclusion on the list were identified; one of those is the provision of a backup service for research data stored on researcher workstations and servers. Also, the proposed list does not include any projects required to support campus-wide student computing facilities and services.
- Some committee members questioned whether the cost estimates of some projects were too low to adequately meet campus needs.
- The Chairs of the respective Council committees expressed concern about how the University would fund the proposed projects given that the identified gap is close to \$20 million over the next five years.
- Committee members wanted to know the priority order of the proposed projects. A number stated that the University will need to make progress on all of them over the next five years. Some suggested that instead of setting priorities for the entire list of projects, initiatives should be identified that will be undertaken (outcomes that will be realized) at various funding levels; this would help the University determine an appropriate commitment.
- Committee members also identified various potential funding sources:
  - a special capital request to the province for ICT;

- including ICT generally and/or specific ICT projects in the “Thinking the World of our Future“ fundraising campaign;
- indirect costs of research; and
- increasing the level of University capital funding allocated towards campus-wide ICT services.

## Major Projects Related to Campus-Wide ICT Services (Over Next Five Years)

Projects to Improve Campus-Wide ICT Services. These Services Support Teaching, Learning, Research and Administrative Service Delivery.	1. Upgrade existing computer room space and develop new space to meet campus needs.
	2. Introduce cyclical (3 year) renewal of servers (including disk and tape backup devices) so that they continue to have the functionality, capacity and availability required by the University community.
	3. Introduce provision and cyclical renewal of desktop/laptop computers for faculty members.
	4. Enhance campus identity management/authorization/authentication system.
	5. Enhance ICT security on campus to protect University business and research data, and to provide a safe and productive ICT working environment for instructors, students, researchers and staff.
	6. Deploy additional servers and software to meet the University's Business Continuity and Resiliency Plans for selected campus-wide ICT Services.
Projects to Improve Support for Teaching and Learning	7. Expand campus-wide wireless network services.
	8. Install/upgrade classroom technology along with classroom renovations to meet changing needs of instructors and students.
	9. Implement new technologies to support new teaching and learning methods.
	10. Develop a media lab to support the development of a media/ICT-literate community.
Projects to Improve Support for Research	11. Digital resources repository for teaching and learning
	12. Complete the work for the WestGrid CFI project (part of the pan-Canadian high performance computing initiative).
	Upgrade existing computer room space or develop new space to meet needs of researchers (included in initiative # 1 above).
Projects to Streamline Administrative Processes and Improve Services	13. Provide additional ICT infrastructure to support research.
	14. Purchase and install campus document management/workflow software along with required hardware, and implement several campus processes.
Projects to Support University Planning	15. Implement a web page content management system for campus-wide use.
	16. Implement an enterprise data warehouse to improve our institutional analytics/reporting capability.
Projects to Support Business Processes	17. Enhance the alumni and fund-raising system (U-Friend).
	18. Modify institutional systems to be in compliance with Bill 180.
	19. Continue with enhancements to major institutional systems (About-US, SiRIUS, UniFi, Library, ...).

## Brief Project Descriptions and Cost Estimates

	<b>Initiative</b>	<b>Est. 5 Year Capital Cost</b>
<p>Projects to Improve Campus-Wide ICT Services. These Services Support Teaching, Learning, Research and Administrative Service Delivery.</p>	<p>1. Upgrade existing computer room space and develop new space to meet campus needs.</p> <p>Additional space, emergency power and air conditioning is required to house the network and computer equipment required to provide campus-wide ICT services and to support research that increasingly requires the use of large computers.</p> <p>In the last year, the University has constructed additional computer rooms at the USB and Spinks. A large portion of the USB space will be used for the WestGrid disk storage facility.</p> <p>Additional emergency power (and/or long-run uninterruptible power supplies) and air-conditioning will be required in both rooms as more servers are deployed in those spaces. Furthermore, additional computer room space may be needed in the Health Sciences complex and/or Engineering.</p> <p>Based on previous computer room construction, a conservative estimate of the cost to add even a small amount of emergency power and air conditioning and to develop computer room space in the Health Sciences complex is estimated at \$2 million. Extra funding would be required to develop computer room space in Engineering, should such space be required.</p>	<p>\$2,000,000</p>
	<p>2. Introduce cyclical (three year) renewal of servers (including disk and tape backup devices) so that they continue to have the functionality, capacity and availability required by the University community.</p> <p>150 (physical) servers are used to provide e-mail, virus detection, spam filtering, network domain name services, web page hosting, file services, library system hosting, PAWS, administrative database hosting, instructional and research application hosting, software distribution, ICT security, etc. Required funding is \$400,000 per year. Due to pressing needs in other areas, the capital allocation to server renewal last year was only \$200,000 (compared to about \$400,000 in other years), putting services at greater risk.</p>	<p>\$2,000,000</p>

	<p>3. Introduce provision and cyclical renewal of desktop/laptop computers for faculty members.</p> <p>Includes hardware, software and improved security (e.g. firewalls, automated updates). Recent desktop/laptop purchases range from about \$1,200 to \$3,000. Tablet computers will be at the high end of this range. Additional cost will be incurred for some software and peripherals (e.g. printer, backup devices). The proposed budget assumes a three-year renewal cycle with a cost of about \$1,000 per year (figure includes a small amount of support) and 1,000 computers. This amounts to \$1 million per year (a total of \$5 million over five years). A modest pilot program was launched in the fall of 2007 and was well-received.</p>	\$5,000,000
	<p>4. Enhance campus identity management/authorization/authentication system.</p> <p>Our current system manages authorizations for 67,000 users and 870 services. It synchronizes passwords for many services and support for CAS single sign-on is in progress.</p> <p>Finer grained authorization, Shibboleth support and federated (inter-university) user identity management/authorization is required.</p>	\$750,000

	<p>5. Enhance ICT security on campus to protect University business and research data, and to provide a safe and productive ICT working environment for instructors, students, researchers and staff.</p> <p>The number of Internet-based “attacks” continues to increase. For example, we block some six million attempts <u>daily</u> to probe the campus network and the computers attached to it. During peak attack periods, we have blocked as many as 350,000 e-mail messages that contain a computer virus per day. Similarly, at peak periods we have blocked the delivery of some 450,000 e-mail messages per day from known spam sites (this does not include the e-mail messages quarantined as suspected to be spam).</p> <p>The impact of a successful Internet-based attack is significant and can include the following:</p> <ul style="list-style-type: none"> <li>• disruption of University services (those services could include student registration, payment of tuition online using credit cards, use of student computing facilities, online course delivery, e-mail, etc.);</li> <li>• use of University computers for illegal purposes;</li> <li>• modification, deletion and/or distribution of confidential University data;</li> <li>• identity theft;</li> <li>• loss of trust in the University computer/network system; and</li> <li>• loss of public confidence in the University of Saskatchewan.</li> </ul> <p>The University must ensure that its business and research data is secure and that instructors, students, researchers and staff have a safe and productive ICT environment in which to work. While progress has been made in this area, it is still insufficient. For example, Moneris would not allow the University to extend the use of online credit card payments on campus until aspects of our campus ICT infrastructure were made more secure and we provided 24x7 monitoring of that infrastructure. The increasing trend of students and visiting scholars to bring and connect their computers to the campus network increases our security risk that campus computers can become compromised.</p>	\$1,000,000
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	<p>6. Deploy additional servers and software to meet the University's Business Continuity and Resiliency Plans for selected campus-wide ICT services.</p> <p>The University relies upon ICT for its teaching, learning, research and business activities. It is hard to find an activity at the University today that does not depend upon ICT.</p> <p>As doing academic or administrative work becomes synonymous with using ICT, students, instructors, researchers and staff expect a ICT service availability that approaches 24 x 7. In reality, certain system failures may cause ICT services to be unavailable for days, weeks or even several months. These services include student registration, grade entry, payroll, UniFi, e-mail, Blackboard (formerly WebCT), PAWS and many others.</p> <p>ITS has been asked to work with the University community to develop a Business Continuity Plan for these services. While the plan is not yet developed, we expect that additional investments in servers and software will be required to meet the University service needs. Additional staffing will also be required.</p>	\$2,000,000
Projects to Improve Support for Teaching and Learning	<p>7. Expand campus-wide wireless network service.</p> <p>We presently offer wireless network access from about 250 places on campus, including some public spaces, some meeting rooms, some research spaces and some classrooms. This number will expand this year to approach 400. It is our intention to provide wireless network access to all formal (e.g. classrooms, libraries) and informal learning spaces as well as to offices.</p> <p>It is estimated that another 600 locations are required to provide campus-wide coverage. This would include coverage in just over 350 classrooms in the shared classroom pool. The installation cost is estimated at \$1.2 million. The annual cost of cyclical renewal of 1000 access points (currently planned to be replaced every three years) would be about \$250,000.</p> <p>It is interesting to note that under the Academic Health Sciences project, ITS and the College of Medicine are investigating the provision of a complete in-building wireless system that will support computers, pagers, cell phones, equipment location tags, and PDAs. This system would interoperate with one planned for Royal University Hospital. ITS is also evaluating this system for use in other campus locations if it proves to be cost-effective.</p>	\$1,450,000

	<p>8. Install/upgrade classroom technology along with necessary renovations to meet changing needs of instructors and students.</p> <p>Health Sciences B450 has been referred to as a model teaching space. While there will be some "technology" cost to upgrade the University's teaching/learning spaces, the majority of the cost is construction related. Assuming an average cost of \$35,000 per classroom, the requested funding would enable the renovation of about 100 classrooms over the next five years.</p> <p>We have 350+ teaching spaces in the shared classroom pool and we have equipped 152 of them. At this pace, it will take more than 15 years (and cost \$12 million) to renew all 350 classrooms in the shared classroom pool. Actual costs per classroom will depend on teaching and learning requirements.</p>	\$3,500,000
	<p>9. Implement new technologies to support new teaching and learning methods.</p> <p>Faculty and students expect to use cutting edge ICT in teaching and learning. Technologies requested include course management systems, lecture recording and streaming video playback systems, web conferencing, online exams, podcasting, blogs, wikis, PDAs, e-portfolios, etc. Network connectivity to experiential learning sites will often also be required. The cost to provide this technology will depend upon the pace of University adoption.</p> <p>A campus-wide implementation of some technologies can cost \$200,000–\$500,000, or more. This estimate represents an investment of \$400,000 annually for five years.</p> <p>The specific service improvements that will be undertaken yearly will be determined in consultation with the E-learning Priorities Committee, the Academic Support Committee and others.</p>	\$2,000,000
	<p>10. Develop a media lab to support the development of a media/ICT-literate community.</p> <p>To best capitalize on new technologies for teaching, learning and research both faculty and students need a "hands on" opportunity to create media in support of their activities. A well-equipped centrally located media lab developed in collaboration with the ULC will provide the opportunity to acquire this knowledge through creating a wide range of teaching materials, and class presentations as well as familiarizing themselves with new technologies.</p>	\$200,000
	<p>11. Digital resources repository for teaching and learning.</p> <p>The University produces excellent digital teaching and learning resources from single images through to sophisticated tutorials. A learning object repository will enable sharing and repurposing of these assets across campus.</p>	\$100,000

	An open-source product is being evaluated for this purpose. If the evaluation is positive, funding for a commercial product will not be required.	
Projects to Improve Support for Research	12. Complete the work for the WestGrid CFI project (part of the pan-Canadian high performance computing initiative).  This assumes that the requested provincial contribution of \$1.6 million will be secured <sup>8</sup> .	\$75,000
	Upgrade existing computer room space and develop new space to meet needs of researchers.	Included in Project #1
	13. Provide additional ICT infrastructure to support research .  Infrastructure may include the ICT required to establish a Statistics Canada Research Data Centre, high performance servers, visualization facilities, software licenses, and/or enhancements to the Digital Media Research Centre.  The level of investment (project scope) will depend upon the infrastructure that the University wishes to provide to support researchers (as opposed to the facilities that researchers must acquire to perform their specific research). With few details at this time an annual investment of \$200,000 is requested <sup>9</sup> . The specific service improvements that will be undertaken yearly will be determined in consultation with the Academic Support Committee, the Research, Scholarly and Artistic Work Committee and others.	\$1,000,000
Projects to Streamline Administrative Processes and Improve Services	14. Purchase and install campus document management/workflow software along with required hardware, and implement several campus processes.  Cost will depend upon scale of implementation.	\$500,000
	15. Implement a web page content management system for campus-wide use.  Cost will depend on scale of implementation.	\$250,000
Projects to Support University	16. Implement an enterprise data warehouse to improve our institutional analytics/reporting capability.  Includes software licenses, hardware, design and implementation.	\$3,000,000

<sup>8</sup> In addition to provincial funding, the project budget includes industry and University in-kind contribution of over \$1 million.

<sup>9</sup> As a reference point, the province of Alberta has committed to investing \$15 million per year over the next five years to improve the province's cyberinfrastructure in support of research and innovation.

Planning	Actual cost will depend upon the final project scope. Does not include the cost to address system-specific (About-US, UniFi, SiRIUS, etc.) operational reporting needs.	
Projects to Support Business Processes	<p>17. Enhance the alumni and fund-raising system (U-Friend). University Advancement, in consultation with ITS, has decided not to replace their alumni tracking and fund-raising system during this planning cycle. Funds that might have been allocated for a system replacement will instead be directed towards in-house developed enhancements and to support University fund-raising activities.</p> <p>Based on the implementation costs of other systems, the implementation cost for this system is estimated at \$4-5 million (including operational reporting capability). This may be required during the next four year planning cycle.</p>	Not Required Within this Planning Cycle
	<p>18. Modify institutional systems to be in compliance with Bill 180. Bill 180 may become the Canadian equivalent of the Sarbanes-Oxley Act, an act to improve organizational accountability. The full business impact of this bill cannot be properly assessed until the bill is finalized, and so the cost to modify our institutional systems to be compliant with the bill cannot be estimated at this time. The actual cost could turn out to be small or it could run into the millions of dollars.</p>	\$500,000
	<p>19. Continue with enhancements to major institutional systems (About-US, Library, SiRIUS, UniFi, ...). The operating budgets for those systems were designed to be sufficient to handle major system upgrades as well as the development of some new functionality. Experience has shown that these operating budgets may not be sufficient to purchase and implement new modules that are required to meet changing University needs. While there have been isolated discussions about software that could be helpful<sup>10</sup>, the specific modules that may be required over the next five years are not known at this time. Therefore, an accurate cost estimate is not available at this time.</p>	\$ TBD

<b>Cost Summary</b>	Total project funding required over next five years (Estimated)	\$25,325,000
	Less capital funding available (presently \$1.15 million/year)	\$5,750,000

<sup>10</sup> Both SiRIUS and UniFi have presented PCIP with requests for increases to ongoing operating budgets, the Library is undertaking a major upgrade to its system and conversations continue with other groups. The About-US group in HRD, for example, feels that a faculty/staff recruitment management module would be beneficial to the University.

Incremental funding required over next five years	\$19,575,000
Incremental funding required annually	\$3,915,000

### Unit-Specific Projects

<p>Acquire and implement a system to support instructional and administrative needs in the College of Dentistry's Dental Clinic.</p> <p>The College feels that their current system no longer meets its teaching and administrative needs. It also uses technology that is no longer supported by the manufacturer. Based on a needs assessment and product evaluation done almost three years ago, a replacement cost of \$700,000 is estimated.</p>	\$700,000
<p>Select and implement an electronic medical records (EMR) system for the WestWinds Primary Health Clinic.</p> <p>The College of Medicine's Department of Family Medicine is the largest beneficiary of this system. An EMR system is a tool used in recruiting medical residents. Student Health Services will use it too. Total project cost is estimated at \$500,000 but some funding is expected from the Province and the Saskatoon Health District. The College of Medicine and the Department of Family Medicine have allocated \$280,000 towards this project. A needs analysis and product survey is required to determine the project cost more accurately.</p>	\$500,000
<p>Implement business support system(s) for ITS.</p> <p>ITS requires systems to help manage the delivery of their services. Required functions include scheduling, inventory, work order, billing, problem tracking and project portfolio management. Other ICT support units on campus (such as EMAP, FMD, FSD, Consumer Services and Colleges) could also make use of some of this functionality, providing an important level of standardization. Estimated cost over the next five years is \$500,000.</p>	\$500,000

### Other Potential Projects (In The Very Early Planning Stages)

Development of a backup service for research data located on researcher workstations and servers.	\$ TBD
Provision and cyclical renewal of desktop/laptop computers (hardware, software, servers) used in campus-wide student computing facilities.	\$ TBD
<p>Provision and cyclical renewal of desktop/laptop computers for staff (other than faculty, which is covered under project #3 above).</p> <p>It's reasonable to assume a cost of about \$800 per computer per year for hardware, software and peripherals for these machines. The overall funding requirement can be reduced if colleges and departments provide support from their operating budgets.</p>	\$ TBD
<p>Provision of adequate office space and other work space for ITS.</p> <p>ITS requires space that is suitable and conducive to providing services to the campus community in a cost-effective manner. ITS' offices are now located in many buildings across campus. This is appropriate for services that are delivered to a specific group of people (e.g. end-user support) located in a specific building.</p> <p>For other services, however, a consolidation of ITS office space in one, two or three locations will improve productivity and bring staff together into a more efficient and cohesive unit.</p> <p>Additionally, the establishment of "ITS Central" would provide a single location (one stop) for all "front-line" services including help, desktop support, consulting, desktop sales, workstation repair, and, if possible, training. ITS Central must be located in a location that is convenient to instructors, students, staff and researchers. The University Learning Centre or space close to the ULC (for example, near "Student Central) would be ideal.</p> <p>Costs are unknown but are expected to be high given current construction prices.</p>	\$ TBD